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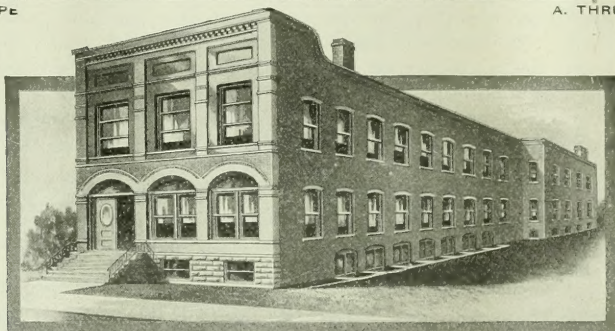
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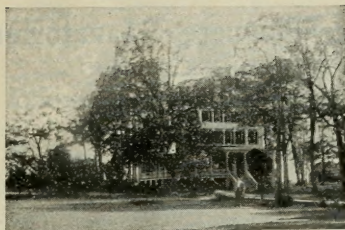
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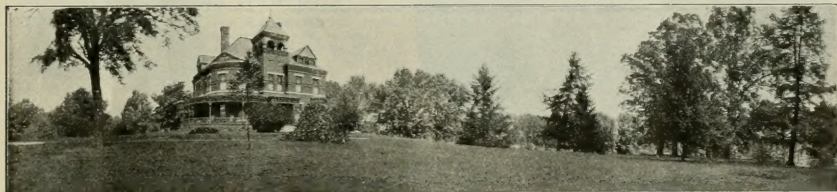
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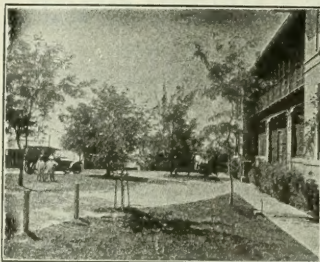
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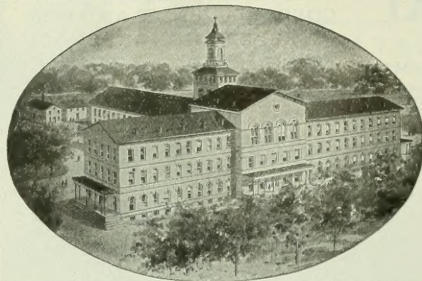
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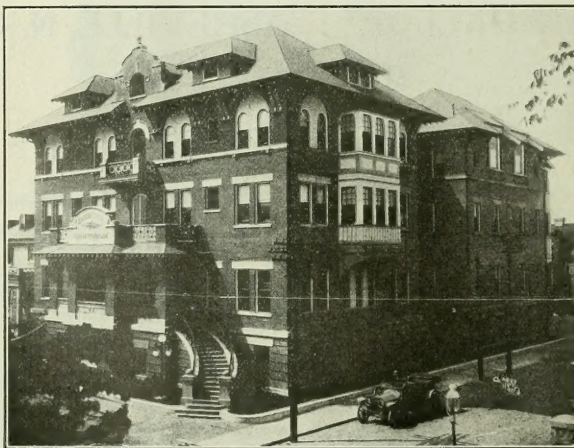
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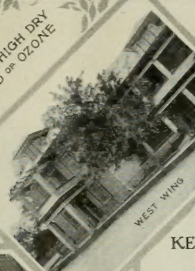
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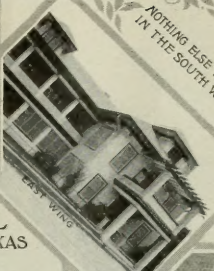


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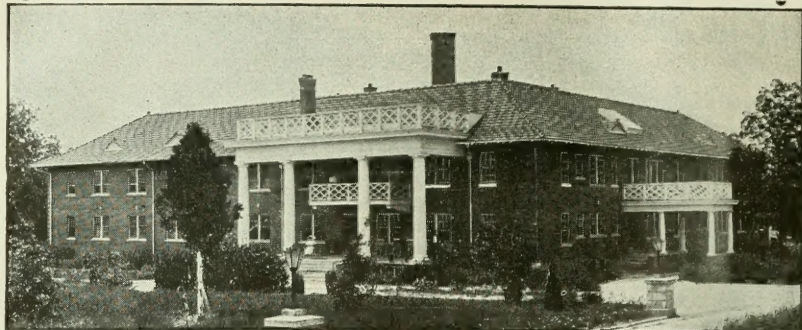


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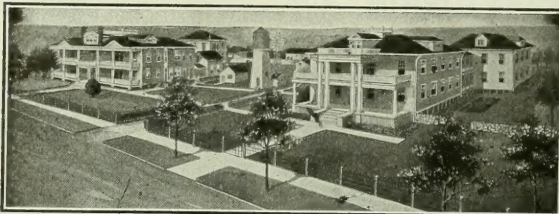
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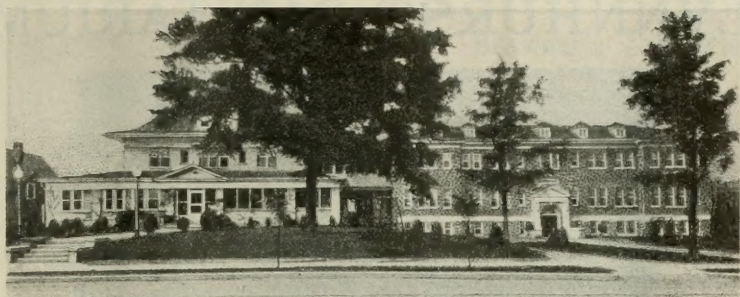
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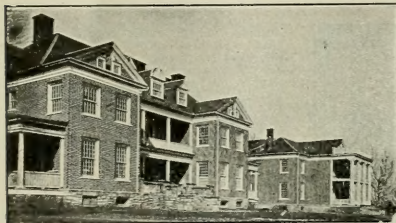
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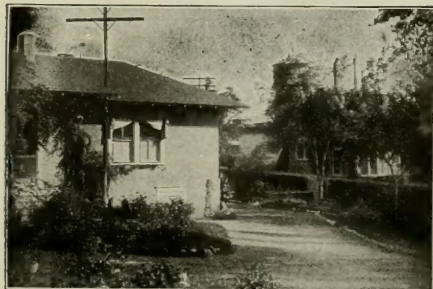
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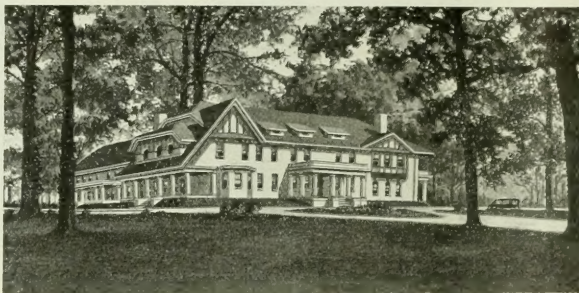
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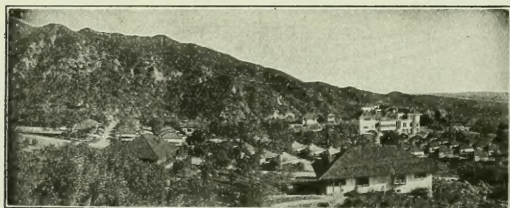
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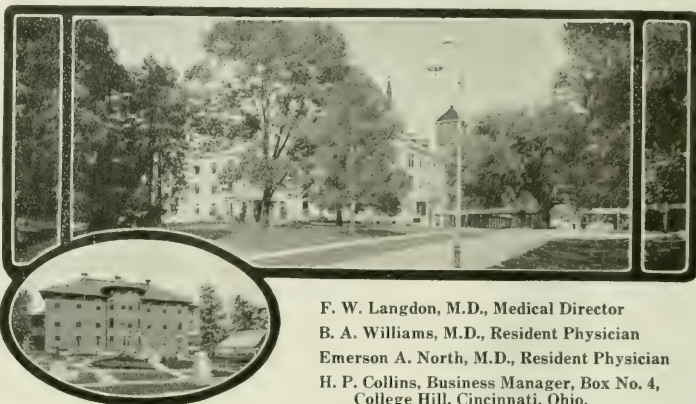
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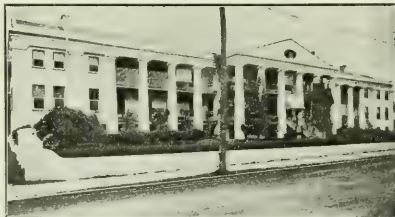
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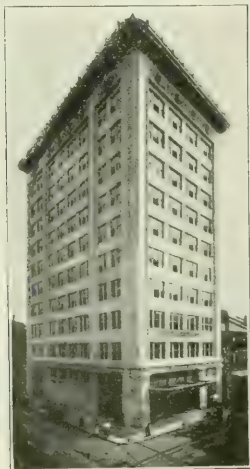
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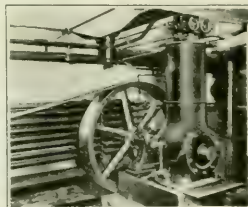
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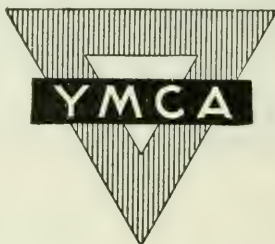
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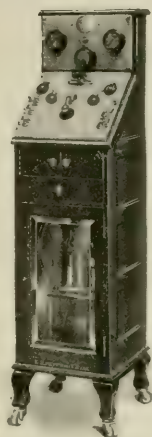
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ACIDOSIS: RETROSPECT AND DISCUSSION*

BY THOS. D. PARKE, M.D.,
Birmingham, Ala.

HISTORICAL

Acidosis constitutes a territory in contemporary medicine that, while still occupied by explorers, is of great common interest to physician and surgeon. Personally, the territory was entered several years before it was identified and recognized as acidosis.

Before this Society, in July, 1903, report was made of several cases presenting a symptom-complex not previously encountered by this reporter or by his local confreres. The cases conformed to no class described in the text-books of the day. A rather diligent search of the current medical literature in English failed to throw light upon the subject. Post-mortem notes on the findings in two cases accompanied the report. Because of the rapid and marked enlargement of the liver and because fatty degeneration of the liver was the principal post-mortem finding, the cases were designated "liver cases" as a frank acknowledgment of lack of definite knowledge.

In 1907 a paper was presented by the writer before the Pediatric Section of the American Medical Association (*Journal of American Medical Association*, Nov. 30, 1907), giving the symptom-complex

and histories of typical cases, accompanied by the post-mortem findings in nine autopsies. Following the reading of this paper, Dr. J. L. Morse, of Boston, in private conversation, stated that the symptoms suggested the possibility of acidosis and the advisability of an investigation from this angle.

The literature at that time was most meager and the descriptions of acidosis encountered did not conform to the cases under study. But the longer the investigation was kept up, the stronger became our opinion that acidosis was the condition involved.

In 1910, a second paper was presented to the Pediatric Section of the American Medical Association at the St. Louis meeting (*Journal of the American Medical Association*, September 17, 1910), in which acidosis was given as the probable explanation of the cases described in both papers. By 1910 more and more was being written on acidosis, and some strong and final pronouncements were ventured by several writers who plainly had not informed themselves of the serial history of the theories explanatory of the nature and cause of the condition. Starvation was assigned a very prominent role in its causation by the writers of the day. As entry into the territory of acidosis had been made without chart and purely by clinical observation, so likewise had entry been made earlier into the uncharted territory of starvation in childhood.

In 1900, the withdrawal of all food and the administration of large quantities of water had been adopted in the manage-

*Read before the Jefferson County (Alabama) Medical Society, March 11, 1918.

ment of severe cases of colitis. The result, as compared with the feeding management then in vogue, were most encouraging; but just how long young children could be safely kept on water and without food of any kind, was not known and could not be determined by consulting the available literature. It was known that adults had fasted on water for forty and even fifty days; but no data were found telling how long young children could be kept on water alone. In a rather extensive search for recommendations for giving water without food forty-eight hours was the limit anywhere encountered. It was known that new-born infants could survive two and three days on water, as such instances had been encountered, and it was argued that if the new-born with its slight resistance could withstand two days, a child of a year ought to be able to live even longer on water.

And so with the full consent of intelligent parents, who had all the meager facts presented for their consideration, a child of fifteen months suffering from a severe ileo-colitis was kept on water alone, without any kind of food, for five days. The colitis was of such severity as to produce a number of general convulsions during the first two days, to be accompanied by high temperatures and to entail a prolonged convalescence. At ten years of age her carpal bones, under x-ray, showed normal development. At school and college she has made an exceptional record.

When the "liver cases" were encountered, in 1903, complicating cases of ileo-colitis, they were managed as were other colitic cases by withdrawing food and administering abundant water for such periods as seemed indicated in each particular instance. Between 1903 and 1910 the recovered cases of severe acidosis had been kept on water, without food of any kind, for from five to seven days. Seventy-one per cent. of the cases encountered had died after forty-eight to seventy hours of illness. The 29 % recovering had done so in the face of the withdrawal of all food for the periods indicated.

It was manifestly impossible to agree with the currently accepted theory of the role of starvation in this class of cases. Were the theory correct, then all the recovered cases should have grown worse under

water alone. The fatal cases died so promptly that starvation could not possibly have come into play as a factor. The comment of the 1910 paper on current conceptions was: "This recovery * * * and other recoveries from similar conditions, under enforced starvation of from five to seven days, would seem to merit some attention in view of the role assigned to starvation in the production of acidosis."

It seemed then, as now, that theories ought to fit the facts and here were the stubborn facts of experience, verified time after time, that did not fit in with current conceptions. It was a matter of interest to read from time to time the finality of conclusions based only upon theories. One teacher gave as his finality in a journal article that it was criminal practice to withdraw food from a child suffering from acidosis.

When the Allen treatment of diabetic acidosis was published with accepted backing, and when Bennett's monograph, "A Study of Prolonged Fasting," was published with accepted backing, it was at once recognized that an epochal change had taken place in current conceptions.

Agreement is general that acidosis is not a disease but a metabolic disturbance produced by some abnormal condition of the body. Agreement practically ends with this generalization. Most writers have come to think that more than one type occurs, and that the severity of the types varies from mild disturbances, scarcely recognizable, up to the dangerous types encountered in colitis, in diabetes, in surgical cases, in delayed chloroform poisoning, and in the toxemia of pregnancy.

We meet with the milder types in the beginnings of various acute diseases, such as measles, scarlet fever, influenzas, and pneumonia.

Another type or class is furnished by those heretofore known as cyclic vomiting. The variations in this class are marked and range from mild to very severe. The term cyclic vomiting is open to criticism, as it merely defines the tendency of the class to recur at varying intervals of time. In the milder cases of this type or class, there is an acetone odor

of breath, skin and urine, obstipation or constipation, vomiting at frequent intervals, and anorexia. More fluid is returned with the vomited material than is taken into the stomach. In a recent case the child vomited from one to three ounces of fluid at hourly and two hourly intervals, without receiving any liquids by mouth, the rectum having been utilized for supplying the water requirements of the system.

In the severer types of this cyclic vomiting class are found acetone odor of breath and of the skin so pronounced as to be detected on approaching the bedside, vomiting, anorexia, obstipation, drowsiness, tenderness of the liver, and an absence of or slight fever. Convulsions have been encountered in only two cases. One in a child of four years and one of three years. In the child of four, the tenderness of the liver was so pronounced a symptom as to raise serious question as to the presence of an acute abdominal condition, probably surgical. But it was definitely and conclusively proven to be due to liver tenderness. In the child of three, convulsions occurred after two days of acidosis and promptly resulted fatally. This has been the only fatal case personally attended in a long series of the cyclic vomiting type.*

Children subject to this recurrent type furnish us trying problems of management. At recurrent intervals of longer or shorter duration, weeks or months as the case may be, the attack begins, precipitated by error of diet or some intercurrent disease. In the ordinary case from error of diet, the attack is preceded by fretfulness, capricious appetite, and sometimes by clay colored stools. The attack lasts from three to seven days and the child emerges weak and depleted, but soon regains its usual status. The list-

lessness, the drowsiness, the repeated vomiting, and the anorexia tend to produce an anxiety in parents not often duplicated in non-febrile conditions.

In the next and the severest class of cases are embraced the ones with enlarged liver, labored breathing, obstipation—cases described before this Society in 1903, before the Pediatric Section of the American Medical Association in 1907 and 1910, and before various other societies during the intervening years. The attack is preceded and precipitated by some intestinal disturbance, usually a colitis and usually a colitis of mild degree. After the intestinal disturbance has been present for a variable time, two or three days as a rule, the child develops labored breathing. Though the patient may have been very slightly ill from his precipitating illness and may have occasioned no uneasiness whatsoever to his attendants, so soon as the labored breathing sets in, the picture changes and no one doubts the presence of a serious situation.

The respirations vary from thirty-five to sixty per minute, the air rushes into the lungs as in no other condition encountered,—full deep breathing without adventitious sounds. The hand held in front of the mouth receives the impression of a cold breath, due evidently to the volatile substances exhaled. The nostrils show a deposit of soot, a mechanical result of the labored breathing.

The liver is tender and palpable when this labored breathing stage is reached and enlarges rapidly. Time after time, demonstration has been made to attending physicians of a liver just palpable at the costal margin that enlarges in the succeeding forty-eight hours to two inches below the margin and is characterized by a firm, well-defined edge.

Vomiting is ordinarily a prominent symptom. In a very few cases this has been absent. Fluids may be retained for varying short periods and then vomited or they may return almost as soon as swallowed. Thirst is a striking symptom and a distressing one in children old enough to plead for water, cold water, that is ejected as soon as taken. The vomitus, once the contents of the stomach have been emptied, shows little except in the cases where bile is regurgitated into the stomach and

*Since this paper was read, a child of five, sister of this fatal case, has died under very similar history, convulsions ending an attack of four days. Drowsiness, tender liver, no labored breathing, free flow of urine. Autopsy two hours following death. Very fatty liver and enlarged below costal margin. Gall-bladder distended with black-green bile. Kidneys normal in appearance. Bladder contained, at autopsy, seven and one-half ounces of clear urine. Sp. gravity 1005. No albumin. No sugar. Acid in reaction.

produces a brown, coffee-grounds vomitus. The microscope fails to show blood corpuscles in this brown vomitus and chemical examination demonstrates the bile.

The rectal temperature ranges from sub-normal to 100° F. The most frequent temperature encountered is 99.5°.

The kidneys act freely when water is so administered that the needs of the system are met. In only one case of the series was suppression encountered. The urine is limpid, acid, usually free of albumin, and in two cases examined by professional chemists a high ammonia coefficient was reported, as was expected.

The bowel action ceases and obstipation ensues upon the supervision of the labored breathing, except in the very rare case where the colitis has been of sufficient severity to create irritation enough of the mucosa of the lower bowel to keep up mucous actions.

When bowel action is induced by the giving of purgatives, the color is dark-green, almost black-green.

Tympany is rarely present and when encountered is in the terminal stage.

Jaundice has not been observed in any case of the series.

Death occurs in from forty-eight to sixty hours following the onset of the stage of labored breathing. The children are generally conscious until within a few hours of the end. The death rate has been about 80 %.

In the cases going on to recovery, the rapid breathing gradually subsides, the pulse slows up, and the stomach quiets down. The bowel symptoms reassert themselves and the child makes a slow recovery from the colitis. Two instances have been encountered in which a child recovered from an attack only to succumb the year following from a second attack.

Six months to three years has been the range of ages.

Breast-fed, healthy infants have furnished a fair percentage of the cases. Some had never been given any food other than the mother's milk.

PATHOLOGY

The pathology and full explanation of the disturbance of metabolism, termed acidosis, brings us to disputed, because obscure, territory. It brings us to the basic processes of cell life and cell nutri-

tion; and 'though a great deal has been done by physiologists and chemists to advance our knowledge, a great deal still remains for determination. These workers have demonstrated that in acidosis the alveolar air tension is lowered; that there is greater tolerance for alkalies; that the blood approaches closer to the acid state than in ordinary conditions of health; and that the H-ion concentration of the blood is increased. Much as this represents advance of knowledge and much as it holds out promise for the future, it is well perhaps for us to recognize that these states of the blood are the results of antecedent happenings.

Bicarbonate of soda may be given 'till the blood returns to normal alkalinity; but this does not relieve the underlying condition that precipitated the lessened alkalinity, nor is there any unanimity of interpretation among the investigators.

Yandell Henderson asserts that on the Pike's Peak trip he personally found a low CO₂ tension compatible with comfort, 'though indicative of marked acidosis if lowered alveolar tension be accepted as the test of acidosis. He ascribes the condition to the effect of altitude. In the course of the discussion he advances the opinion that evidence of acidosis may disappear from the blood while the condition persists in the tissues.

Poulton claims that a climb of one thousand feet in thirty minutes produces a lower tension than is found in deep coma of diabetic acidosis.

In 1910 it apparently had been demonstrated that the tension of the CO₂ in the respiratory center was the sole stimulus to respiration and that when the CO₂ tension of the alveolar air had been sufficiently lowered, apnoea supervened. Very interesting accounts are given by Haldane in connection with the experiments on forced voluntary respiration and the consequent apnoea, made before and for the benefit of London medical men. Later, however, it was shown that the CO₂ is not specific and that other acids can replace the CO₂ in part or in whole. It has been a common observation to see children suffering from a moderately severe acidosis, showing no labored breathing and yet made to develop it temporarily whenever they cried or used other muscles in strug-

gling. This has been interpreted to mean that while there was present an insufficient degree to cause labored breathing, this needed degree was produced by the added acid products of muscular action.

Children breathing forty, fifty or sixty times a minute, forced thereto by the retained acid products of metabolism, ventilate their lungs, but do not bring about apnoea, as did the experimenters furnished by Haldane for the London physicians. His men could bring about a condition of apnoea, as can any of you, by three minutes of voluntary forced breathing. These children with acidosis, of this severest class or type, keep up the deepest possible forced breathing, hour after hour, and no apnoea supervenes. Their lips are not blue. Their finger nails are not blue. Their blood is well oxygenated as might be expected from the unusual ventilation. Those structures not ventilated are the tissue cells of the body, among others those of the respiratory center that for some reason, as yet undetermined, can not rid themselves of the acid products that automatically force labored breathing.

Starvation was assigned a predominant position in the causation of acidosis, and even today fear of starvation haunts the average surgeon in his solitary hours as he weighs the outcome for his operated patient. It must be a constant source of wonder to these surgeons that Dr. Tanner and Signor Succi managed to pass through the dangers of acidosis incident to their long starvation periods.

The published studies on earlier fasters agree fairly well with the findings of the latest study encountered, that of Bennet on Levantin, the Maltese, as published by the Carnegie Foundation. In these observations on Levantin the total acidity rose rapidly for the first few days, being highest on the fourth day, then gradually fell 'till on the thirty-first and last day of the fast the total acidity was less than at any time during the experiment. This coincided, as pointed out by the author, with the findings of Brugson on Succi and of Cathcart on Beaute.

The Beta-oxybutyric acid increased rather rapidly at first. On the thirty-first day it was less than on the nineteenth or twenty-third or twenty-fourth by 50 %. It fell notably as soon as food was given.

The total nitrogen showed likewise lessened excretion after two weeks, roughly speaking. The authors conclude, from the presence of the oxybutyric acid and ratio of ammonia nitrogen, that there was marked increase of the acidity of the blood of Levantin during the fast. Levantin's respiration rate did not exceed fifteen per minute on the thirtieth day of the fast. A starvation acidosis permitting the subject to maintain the mental and physical activity exhibited by Levantin and by Succi throughout their long fasts is scarcely comparable with the acidosis of our type of case that causes death in forty-eight to sixty hours.

Higgins, Peabody and Fitz (1916 *Journal of Medical Research*) studying the effect of alcohol on healthy subjects taking a carbon-free diet, conclude that their three subjects kept on this diet for a week developed an acidosis of varying degree, as shown by lowered CO_2 tension of the alveolar air by increased urinary excretion of ammonia nitrogen, by the presence of acetone bodies in the urine, and by increased titratable acidity of the urine. They quote von Noorden as having found in a patient with fermentative diarrhea, given a practically carbon-free diet, that the daily acetone excretion, calculated as oxybutyric acid, was 12.8 grams in the first week, 8.3 grams in the second week and 2.2 grams in the third week. This study is instanced to point out the need for caution in evaluating conclusions in the field of pathology of acidosis.

Dr. John Howland and associates of the Johns Hopkins have within the last two years published several articles on acidosis in children that have been widely quoted. These articles frankly base the production of acidosis on failure of the kidneys to excrete acid products and the consequent retention in the system of these acid products. Interesting chemical formulas from the physiological chemists are set forth to demonstrate how the bases of the blood can be conserved at the same time that the acid products are excreted; others to show how combinations can be made with acids to protect the system, but since in a series of about a hundred cases of the severe type only one case of suppression has been encountered, and since free flow of urine has been the rule, the theory of kidney

failure would seem to be invalidated. When a child's stomach goes out of commission as an absorbing organ and no other avenue of entrance of water is provided, naturally little urine will flow. This will persist in any sort of diseased condition.

A recapitulation of ideas and theories as to the pathology of acidosis can scarcely carry satisfaction to any logical mind. No explanation has been forthcoming of the rapid enlargement, tenderness and fatty degeneration of the liver. That the liver plays an important role has long been forced by repetition of observation of its changes. Until physiologists can determine what normally takes place in the blood between the intestinal radicles of the portal vein and the discharging hepatic vein, i. e., normal liver synthetic function, it appears rather venturesome to reach, and more so to offer explanation of, the metabolic disturbance involved. The serial history of theories offered in explanation is such as to render cautious the would-be formulator.

PREVENTIVE TREATMENT

The preventive treatment resolves itself into the prevention of the disease or of the digestive disturbance that precipitates the acidosis condition. In the severest or labored breathing, enlarged liver type, prevention involves measures for the lessening of the factors causing infectious colitis. In the recurring class induced by errors of diet and consequent digestive disturbance—the more moderate class—prevention assumes commanding importance. Prevention calls for diet, for regular hours of eating and of rest, and this in turn calls for management and control of the child. The diet found effective in children of three and over has been a sugar-free and fat-reduced one, three meals a day, no food between meals, midday rest, early retiring, close watch for symptoms announcing an approaching attack and then, the cutting down of food 'till the digestive organs resume normal function.

In a civilization where it is considered a great privation for a child to be on a

sugar-free diet and where emotions of pity are aroused and vented, it is none too easy a task for a child to be kept on such a diet. Without control and management it is impossible. Throughout the ages, in Europe, Asia and Africa, the forebears of the race were carrying out their great tasks involving muscular effort and performing these on a sugar-free diet, since they had not evolved the machinery needed to manufacture sugar in quantity. But the present-day descendant of these forebears finds difficulty in sugar abstinence little dreamed of by those who have not essayed the role.

TREATMENT

In the milder class of cases accompanied by acetone odor of the breath and by vomiting of moderate severity, little is needed save water and rest until the attack passes,—a matter of one or two days. Purgatives can be, and generally are, given, but are not essential, as Nature seems to care for the bowels in due time.

In the recurring class, moderate and severe, a purgative may be given—castor oil by personal preference—water by mouth, by rectum, or subcutaneous route—plain water by mouth, soda or salt solution by bowel, normal salt solution by vein or subcutaneously. No food of any description until the child and its tissues wake up, and then dry, starchy food and fruit juice in amounts suitable to the age and condition of the patient. In no other condition do such large firm curds form in the stomach as in acidosis attacks when sweet milk is given. Hence sweet milk has come to be tabooed during the attack.

In the treatment of the severest or labored breathing (large-liver class of cases) eliminative measures have been tried out,—castor oil, magnesia, senna, calomel. It requires rather large doses of purgatives to get results as obstipation is the rule. Opium has been tried in a few cases where restlessness was great, but with little to recommend its continued use. Medicine has offered little, apparently, and has been little given. What

has seemed indicated has been water and this has been given freely. The aim of the writer during these fifteen years has been to furnish an abundance of water to the tissue cells throughout the body. With the stomach out of commission as an absorbing organ and with more fluid being rejected than is taken into the stomach, the lack of fluids promptly becomes pronounced. Whether the water shall carry in solution salt or soda has seemed of less importance than that it shall be water.

Reddened conjunctivæ have been encountered in cases where the importance of supplying water to the tissues had not been understood. Theoretically, soda water is indicated, but bedside observation has seemed to teach that water is the real need of the fixed cells. Where the water had to be given into a vein or under the skin, salt solution has been employed.

In this severest class, forty-eight to sixty hours decide whether the child will succumb or will begin to breathe more slowly, to show a slower pulse and a quieter stomach. The bowel disorder reasserts itself, the liver is smaller, but still tender to pressure. What and when to feed? Five days has been as early as any of the surviving cases have been given food, usually in the form of starchy food. As conditions permit, proteins are added, then sugars and lastly fats. In the crippled condition of the digestive organs we often pass the limits of their capacity for caring for food given and then must go back and gradually build again. Convalescence is slow and to such convalescents as can afford it a change to a more bracing climate is of decided advantage.

As a result of an experience with this severe type lasting over some fifteen years, the conclusion has been reached that medication has effected little and that where enough harm has been done the child succumbs in short order; that where the harm has been short of lethal, our efforts should be directed to putting the child's system in best position to make its fight.

TUBERCULOSIS EXAMINATION METHODS IN THE ARMY*

By I. S. KAHN, M.D.,
Major (M.R.C.), U.S.A.,
Camp MacArthur,
Waco, Tex.

For all practical purposes the rules laid down by the office of the Surgeon-General of the Army for the diagnosis of active pulmonary tuberculosis may be summarized briefly as the persistent presence of areas of consolidation and moisture, with or without clinical symptoms and with or without the presence of tubercle bacilli in the sputum.

One of the most striking points in this connection is that by far the larger number of tuberculous cases encountered in these military chest examinations present absolutely no clinical evidences of their disease beyond slight cough. It must be remembered in making this statement that these examinations are made of what are supposed to be healthy individuals, in most of whom there has been no reason to suspect disease of any kind, being made, as a rule, at the beginning of military service before the demands of such service can occasion any severe breakdown, practically all the obviously sick advanced cases having been previously eliminated by recruiting and regimental surgeons. It might be argued that chest signs alone, in the absence of other well-known clinical classical symptoms, should not call for a diagnosis of tuberculosis. But in this connection it must not be forgotten that in dealing with this disease occasioned by multiple bacterial strains of varying malignancy and in individuals of varying resistant powers, protean clinical manifestations are to be expected.

These facts explain why tuberculous infection may result in general military septicemia running its course in a few weeks, or may grade on down in severity to its usual manifestations of a disease of prolonged chronicity of several years' duration before a fatal termination, or of a prolonged chronicity never leading to death and incommoding but little the individual involved, or may result, in more favorable instances, in more or less ar-

*Approved for publication by Surgeon-General.

restment after even quite considerable degrees of involvement. In some instances the infection never reaches the point where infection clinically or physically can be demonstrated, and when such recognition is possible under suitable environment is often of only comparatively trifling extent or duration; or again, lesions of considerable size and activity may have little or no clinical significance for many years, owing to the non-malignancy of the infecting organismal strain and the favorable environment of the infected individual. Many such cases are seen in the examining room, in both civil and military practice,—truthfully unaware of the tuberculous lesions harbored, possessing only a trifling morning cough ascribed to other causes and appearing in the best physical condition, though harboring areas of consolidation of considerable extent and often with multilobar involvement.

Many of these men are even athletes,—at least athletes temporarily, to speak more correctly. I have had the opportunity of carrying a number of these cases under observation for several months and the persistence of physical signs under military routine is invariably followed by the usual evidences of clinical tuberculous activity, no matter how excellent the general physical condition of the individual at the time of the discovery of the physical signs. In other words, the case of tuberculosis with noticeable cough and clinical toxic symptoms of a few weeks' duration may not be an early case at all, in fact, but seldom is, in reality, representing more or less extensive consolidation of months or years' duration, all the while possessing fine inspiratory rales following cough, indicating disease activity not previously recognized because of lack of cause for the search for its presence. In other words, also, the classical case of tuberculosis with fever, cough, night sweats and emaciation represents not early, but late tuberculosis, no matter how evidently recent may be the obvious recognition of these symptoms, by either patient or physician.

It is the purpose of these Army tuberculosis examining boards, for self-evident reasons, to recognize the disease in its latent or slightly-inactive stage either be-

fore symptom-development has occurred, or when such symptom-development is really in its incipency. Various boards doing this class of work have, day in and day out, demonstrated the possibility of this recognition by the application with sufficient care of the usual ordinary methods of physical examination.

In determining the diagnosis of active pulmonary tuberculosis by physical signs, the classical admitted evidences of such activity are represented by unilateral lagging, deficient expansion, and the presence of dullness, modified voice and respiratory sounds and rales usually crepitant and subcrepitant, later of a coarse or more musical character in the presence of caseation and cavity formation. These rales are all brought out or intensified by the use of sharp inspiration immediately following a quick cough at the end of expiration. This latter procedure will reveal rales ordinarily overlooked by the ordinary examination methods of forced respiratory efforts, and is an obligatory part of the military examination of every chest.

Now while it must be admitted that the crepitant and subcrepitant rale is the most distinctive rale reaction in tuberculous consolidation, the fact must not be overlooked that such rales are indicative not necessarily of the presence of tubercle bacilli, but are merely evidences of pulmonary consolidation, and pulmonary consolidations, even if only small or of multiple extent, may be due to other causal organisms than the tubercle bacillus. Following measles especially, such temporary consolidations occur. Often an acute respiratory infection will pass through an entire company street or barracks, the chest findings of which will simulate perfectly the findings of tuberculous consolidation. Even the x-ray in these cases often fails to make a definite distinction. Another difficulty that is encountered in this work is in connection with the cases of acute generalized bronchitis. While of course the clinical findings in this condition are characteristic, still it must not be forgotten that a bronchitis may easily mask a tuberculous process, the presence of which is impossible of demonstration until the cessation of the extraneous complicating infection.

Again, fine crepitant rales are often found especially over the lower lobes with impairment on percussion and alteration of the normal vesicular murmur, frequently simulating tuberculous consolidation, actually, however, due to post-pneumonic, pleuritic adhesions. The differential diagnosis here often requires Roentgen ray and a certain period of observation in order not to overlook a complicating tuberculous activity. Other causes of error are the misinterpretation of normal changes at the right apex, marginal rales, muscular and articular clicks.

Amongst the initial diagnoses erroneously made by this board through deceptive physical findings in addition to the errors above mentioned, I find one or two cases of lobar pneumonia, two cases of pulmonary abscess, and several cases of pulmonary congestion due to mitral cardiac lesions. In order to make a differentiation in these mentioned cases from actual tuberculosis, it is essential that judgment of a case be not made on a single examination. Consolidations due to non-virulent strains of the pneumococcus, pneumobacillus, micrococcus catarrhalis, staphylo- and streptococcus, tend to clear up within a few days or weeks either under military or fresh air hospital conditions. While a certain amount of reduction of activity may be expected of tuberculous cases under hospital conditions, complete disappearance in two or three weeks is not to be expected, while under ordinary military activity, permanency and even increase of activity are the rule.

Persistency of physical signs is thus our guide. Practically this persistency can be determined only by actual frequent careful re-examinations, including weight findings, questioning and occasional temperature or pulse readings, actual final confirmation being secured by the x-ray. This does not mean that no consideration in these examinations is given to general appearance, obvious temperature, etc. On the contrary, any and all such deviations from the normal are always considered of prime importance, as it is a well-recognized fact that extensive severe pulmonary tuberculosis may exist with very few localized chest signs. On the other hand, it is just as important to recognize the fact

as has been mentioned, that extensive physical signs may exist with very slight clinical evidence.

In our work we find the fluoroscope of considerable value. While its limitations regarding accuracy must be granted, still in a high percentage of cases its findings have given us immediate confirmation, especially in the more gross lesions. Negative fluoroscopic findings have been found to have but little value and are accepted as such only in the absence of physical evidences of disease. I have in our records one case with negative fluoroscopy readings which a few weeks later gave a positive sputum.

In all cases requiring finer detail, or where the clinical and repeated fluoroscopic findings can not be made to coincide, recourse is had to the radiograph. Our experience has been almost exclusively with the flat plate. We have not found the stereoscopic plates necessary. When the x-ray plate has been negative, our physical findings of a few days before have, as a rule, been found absent on subsequent examinations. In only an extremely small percentage of our positive tuberculosis diagnoses, in fact far less than 1 %, have we been unable to secure satisfactory radiographic proof of our physical findings.

These cases under such circumstances have been then classified as tuberculous only in the presence of unquestioned tuberculous signs or history after the elimination of other causal factors by appropriate laboratory tests and consultation with the other departments. Hookworm, syphilis and demonstrated sinus infections have cleared up several such cases whose appearance and run-down condition made them strong tuberculous suspects. In this connection I might add that at Camp MacArthur the tuberculosis board has in the neighborhood of thirty cases daily for fluoroscopic examinations, cases which are handled in a most expert manner by Captain E. W. Powell, M.R.C., of the x-ray department. Daily plated cases run from four to six. As stated before, in only four or five individuals out of nearly a thousand tuberculous cases handled by this board has it been impossible to secure

x-ray confirmation of the presence and location of our previously made clinical diagnoses.

Regarding inactive pulmonary tuberculosis, we are at once faced with the practically universal existence of healed lesions in the entire human race. Our conception of adult active tuberculosis is that such activity represents in the vast majority of all instances merely a break-down of an antecedent childhood infection of greater or lesser extent and importance. Such previous infection well healed undoubtedly confers a degree of immunity which in the adult confines any later tuberculous activity to that of a local chronic slowly-spreading lesion in contradistinction to the large percentage of miliary or acute type cases seen at ages before such immunity has been developed.

In conceding practically universal infection, it must be admitted that a light-up into activity may occur in any individual whatsoever. While this may be accepted as undoubtedly true, still on the other hand it must also be admitted that small, inappreciable lesions are certainly far less apt to undergo break-down than lesions of large extent. The Army regulations set as a standard of rejection, the presence of inactive lesions of more than appreciable size below the apex, which are practically interpreted as follows: Cases limited to the supra-clavicular regions call for no notice. Cases extending below the clavicles or the spine of scapula and lower lobe cases, no matter how long past the stage of activity, call for rejection. These cases are not particularly difficult of recognition. Cicatricial mediastinal tissue present in these cases almost invariably exhibits such presence by surface indications represented by localized areas of retraction, flattening and depressions, especially supra- and infra-clavicular and in the hilus region, accompanied by impairment on percussion and changes in the intensity and quality of the respiratory murmurs, especially if more marked in one side and not symmetrical. The x-ray in our work is of great assistance in confirming the presence and extent of these old fibrous conditions, otherwise their differential diagnosis from alterations in the normal contour of the thoracic wall due to nasopharyngeal obstructions, rhachitic or

developmental abnormalities, at times becomes a matter of some difficulty.

In order to facilitate the work at Camp MacArthur, where some fifty thousand men were examined by a board consisting of from eight to twelve examiners, and in order to obviate consultations and differences among the various members of the board, all of which tend to retard and confuse the work, it was found advisable to divide the board into two groups: Group 1, the routine examining board, consisting of from eight to nine examiners; and Group 2, the consulting board, consisting of the three most experienced members.

The routine examiners, in proceeding with their examinations in the cases of soldiers clearly normal, merely "O. K." slips issued these soldiers carrying their name and organization, which slips are later collected by clerks and used in checking off the organization rosters in order to keep track of absentees who are examined at a later date. These slips are preserved and, as each carries a number previously given each examiner, serve as a means of checking up and identifying the examiner at fault should a soldier be discovered with evidences of tuberculous activity by regimental or camp hospital surgeons, following his acceptance by the tuberculosis board. Each routine examiner is scheduled to make 75 examinations in a day, some 12 to the hour, a number not at all excessive for good careful work,—but obviously there is no time for detailed clinical histories or for the interpretation of abnormalities encountered.

For this reason when a routine examiner encounters a case of chest abnormality of any kind whatsoever, be it in the external contour or in any deviation from the normal, however slight, of the percussion note or respiratory murmur, or should the soldier in the absence of physical findings present the slightest sub-standard appearance (included in this category are all narrow and poorly-developed chests), such a case is then recorded on a 3 x 5 filing card upon which the examiner notes briefly the abnormal or suspected findings and his number or initials with date, at that time giving no more than a brief cursory examination in order to keep his squads moving on schedule.

ROUTINE EXAMINER'S RECORD CARD

Name	Rank	Org.
Date 1st Exam.....	Results	
	Exam. No.....	
Date 2d Exam.....	Results	
	Exam. No.....	
Date 3d Exam.....	Results	
	Exam. No.....	
Date SCD Bd. Exam.....	Results	
Final disposition, date.....	Form E	

RE-EXAMINATION RECORD CARD USED BY
ROUTINE EXAMINERS

This part of the work is merely for the purpose of discovering and not interpreting abnormalities. These abnormal cases, by a filing system, return automatically to the original examiner at the end of a week, usually at 2:30 P. M., when all his routine examinations have been finished. Each examiner will have five or six such daily returns. A period of one week is permitted to pass subsequent to the first examination in order to permit of the clearing up of acute coryzas or simple bronchitis cases. At this second examination, the examiner spends as much time as he deems necessary clearing such cases as he can and holding doubtful cases for further examination. At the end of another week such cases as are not cleared are again returned to him so that each examiner has the privilege of at least two weeks' observation of a case. Cases still abnormal can then be held by him for another week or referred to the consulting section of the examination board for their consideration. Inactive or poor development cases are referred to the consulting board immediately upon their discovery or kept under observation as usual, at the discretion of the routine examiner. The few obviously sick advanced or febrile cases of tuberculosis are of course referred at once to the consulting board.

PHYSICAL EXAMINATION FORM

Form E

Name	Rank	Org.
Date of current enlistment		
Previous service (Yes or No)		
Home address		
Diagnosis	Type	Activity
Extent and location of lesions (sides and lobes)....		
Cough (history and type)		
Hemorrhages		

Apparent duration (acute, chronic, very chronic) ..
 Important complications
 Remarks
 Age Nationality Color
 Build
 Height
 Weight: On entrance into service.....; other
 known; present
 Loss in weight: pounds in months
 X-ray findings
 Sputum findings
 Family history
 Past history
 Recommended for:

Discharge in or not in the line of duty. Disability Retention in service and treatment at Fort Bayard.

Involvement.....

TUBERCULOSIS EXAMINING BOARD,
CAMP MacARTHUR, WACO, TEX.

By.....President,
Major, M.R.C., U.S.A.

Dated.....

The consulting section of the board sits in constant session and acts upon all cases referred by the routine examiners. Each such case presents himself with the card showing the weekly findings of the original examiner. A complete careful chest examination is then made and at this stage for the first time is taken a complete written clinical history and such information secured as might have a bearing on the case, which information is entered upon a special form devised by this board. In contradistinction to the routine board which works rapidly and whose purpose is merely to discover deviations from the normal, the consulting board, whose duty is the interpretation and determination of the significance of these deviations, is a deliberative body giving each case full consideration, taking all the time that may be required. This board seldom handles over thirty-five or forty cases in a day. In this connection it will be noted that a clinical history of the case is secured only subsequent to the notation of the physical findings and is regarded as consequential only insofar as it is consistent with these physical findings. Our Army consists of two classes of men: those whose patriotism leads them to symptom-concealment, and those whose desire for a return to civil life leads them to exaggerations or

deliberate falsifications. By this method it is impossible for an examiner who asks no questions to be biased in his judgment. I have listened to the most woeful stories without the slightest foundations and on the other hand heard the most vehement denials of symptoms even in the face of positive sputa. Cases claiming to be tuberculous with negative findings by the routine examiners are always referred to the consulting board for observation. Of interest in this connection is the fact that a number of discharged cases with negative clinical and family histories at the time of examination have later visited the board and confessed to having been inmates of tuberculous institutions in the past. Following this physical examination by the consulting board come the various confirmatory procedures of fluoroscope, hospital ward observation, sputa, etc., as required. The consulting board completes such cases as it can from the radiosopic report taken into consideration with the findings at its first examination. Probably 50 % of the cases of tuberculosis are closed at this stage. The consulting board summons the remainder of these unsettled cases once a week for such a period of time as is necessary to demonstrate the presence or absence of tuberculous disease, repeating indefinite x-ray findings and occasionally transferring cases to the hospital wards for temperature and pulse recordings. Once a diagnosis of tuberculosis has been reached, it is the further duty of the consulting board to fix the degree of disability and to determine whether or not the disease activity was incurred in the line of duty, and to prepare the military papers required for the discharge of the soldier or for his transference to one of the Army General Tuberculosis Hospitals.

It will thus be seen that the Army tuberculosis examination is not a perfunctory affair and that conclusions are reached only after mature consideration of every case on its merits, at times covering an observation period of many weeks. Undoubtedly tuberculous cases are overlooked and undoubtedly a certain number of cases are diagnosed as such incorrectly, but after nearly a year of this work, in which I have supervised the handling of some seventy-five thousand chest exam-

inations, with the opportunity to follow doubtful cases for months at a time, I am convinced that our percentage of error is infinitesimal and that the work on the whole is of inestimable value not only to the Army and to the soldiers who benefit by virtue of actual early diagnoses, but as an educational institution to the military and civil medical profession and to the country at large.

CONFLUENT SUFFOCATIVE BRONCHOPNEUMONIA IN THE WAKE OF THE PRESENT INFLUENZA EPIDEMIC

BY FRANK A. JONES, M.D.,
Memphis, Tenn.

However much opinion may be divided as to the causative agent in the prevailing epidemic of influenza, the pneumonia that accompanies, or rather follows, is dramatic and tragic.

It is to the bronchial tree what cholera is to the digestive tract,—what confluent smallpox is to the skin.

In the epidemic prevailing here the mortality is high and rapid. It is needless to discuss the laboratory side of the question. It has been sifted from every angle from that viewpoint.

In nearly all of the patients which we are seeing in Memphis, the waxy pallor together with the cyanosis are the insignia of rapid blood changes and destruction, and pulmonary suffocation, ending in death in most instances in twenty-four to forty-eight hours' time.

The patient literally drowns from broncho-pulmonic secretions. It is a veritable kaleidoscopic bronchopneumonia. There is an active pulmonic edema rather than passive. Clinically speaking, confluent suffocative broncho-pneumonia covers the symptoms and physical findings.

Surely vaso-motor paralysis plays an important role.

Vaccines and polypharmacy have been futile. Much has been said about the patient's physical state at the time of the attack. The author has found that the robust have fallen victims just as readily and rapidly as the debilitated. Thus far every pregnant woman who has been attacked has miscarried and died.

SOME DANGERS OF THE CHENOPODIUM TREATMENT*

BY DAVID A. ROTH, M.D.,
Resident Physician, Hospital Santo Tomas,
Republica de Panama, Panama.

The extensive use of the oil of chenopodium in the treatment of uncinariasis makes a study of its untoward effect of real importance. It is the object of this report to mention the disagreeable features connected with this treatment and to point out some of its dangers.

The facts here submitted comprise the joint experience of several men in the medical wards of Santo Tomas Hospital extending over a period of two years. Approximately 4000 cases were treated and the following routine for adults was adopted:

1. All solid food is withdrawn at 11 A. M.

2. Two fluid ounces of castor oil are given at 4 P. M.

3. Three doses of 15 minims each of the oil of chenopodium, 45 minims in all, are given at 2-hourly intervals, beginning at 8 P. M.

4. Two hours after the last treatment, i. e., at 2 A. M., another purge of two ounces of castor oil is given.

In the last six months the purgative was changed from castor oil to two fluid ounces of a 50 % solution of magnesium sulphate.

The routine administration of 45 minims of chenopodium would appear excessive in the light of a recent publication,¹ but that quantity was found essential to effect a cure. The doses for children were graded according to the age and size of the child.

No accurate statistical data were kept of all our cases, but the general results are well illustrated by the records of a small series collected in one of our wards.

	No.	%
Total number of cases treated....	103	
Number showing reaction	29	28
Number showing deafness	21	20

Dizziness, nausea and vomiting, headache and general depression were the

other symptoms observed. Deafness is by far the most disagreeable after-effect of the chenopodium treatment. It occurs in 20 % of all the cases, varies in intensity from very mild to a complete loss of hearing, and lasts anywhere from one week to several months. As most of our cases come from the interior we are unable to state exactly how soon hearing returns to normal, but there are 4 cases known to us in which some deafness still persists two years after the date of treatment. This symptom not only prolongs the patient's stay in the hospital, but diminishes his usefulness after his discharge, and for a time, at least, defeats the object of the treatment. This was our chief consideration in substituting the oil of chenopodium by other remedies, much more expensive and perhaps not so efficient.

There is a class of patients coming from the interior of the Republic which from long-standing hookworm infection and its subsequent anemia shows the clinical features of cardio-renal disease. They complain of edema, dyspnea on exertion, cough, fever and general debility. Examining these cases, one usually finds marked pallor, edema, a weak rapid heart, and an enlarged spleen. The blood shows a secondary anemia, the urine contains some albumin and the uncinarial infection is usually heavy. It is this class of patients in which the intestinal infection is the underlying cause of the disease that is least able to take the chenopodium treatment. In them the administration of the drug is usually followed by a severe reaction. Deafness is very common and fairly complete. Headache, vertigo and a state of general depression gradually going into coma and rarely death, may occur. As no such reaction was observed after the administration of thymol in similar doses, we learned to regard it as due to chenopodium poisoning.

Our records show four fatal cases in the year of 1917. One of these did not have uncinaria but received the drug by mistake and, therefore, does not come under this series. A brief review of the others follows:

*Read before Canal Zone Medical Association, June 17, 1918.

CASE REPORTS

Case 1.—J. G., male, Panamanian, age 15 years. Admitted on February 6, 1917. Diagnosis: Uncinariasis and secondary anemia.

He received the first chenopodium treatment, adult dose, on February 7, and showed absolutely no reaction. The stool still continued positive and two days later another treatment was given. The first evidences of reaction were observed thirty-six hours after the second treatment, when the patient appeared depressed and refused all food. The following day he was in a state of semi-consciousness, finally going into coma, which lasted until his death, five days later. During this time the temperature was of an irregular septic type, the heart action weak and rapid, and the general muscular tension high. The post-mortem findings in this case were practically negative with the exception of a fatty liver.

Case 2.—E. G., male, Panamanian, age nine years. Admitted September 14, 1917. Diagnosis: Uncinariasis, ascariasis and anemia.

He received the first treatment, consisting of 22 minims or one-half the adult dose on the day following his admission. He showed no reaction whatever and four days later another treatment was given. Some depression was noted the following morning and within twenty-four hours he went into a series of convulsions followed by coma, and death in two days. The only important post-mortem finding was an ulcerative colitis, probably due to his chronic intestinal infection.

Case 3.—M. O., female, Panamanian, age 16 years. Admitted November 8, 1917. Diagnosis: Chronic cervicitis, uncinariasis.

This patient received but one treatment, adult dose, on November 15. She showed a marked reaction, unconsciousness, convulsions and high fever, developed within two days. She died five days later of an intercurrent attack of pneumonia, probably an aspiration pneumonia due to feeding by a stomach tube. The post-mortem findings were those incident to pneumonia.

Cases 1 and 2 illustrate the important fact that a dose which causes no untoward effects at first may produce the severest type of reaction when repeated within a few days. In a series of animal experimentation conducted for the U. S. Bureau of Chemistry, Salant² concludes that this sensitiveness to the drug may last nine days,—a valuable point to remember considering the frequency with which the treatment has to be repeated. None of the pharmacologists who experimented with this drug state exactly how it causes death, but all agree that it is a marked local irritant and a general depressant.

CONCLUSIONS

1. The oil of chenopodium is a depressant poison capable of producing serious untoward effects and even death.

2. It should not be administered unless there be ample facilities for studying the cases before and after administration. This should include a careful determination of the percentage of hemoglobin.

3. It should not be administered to a patient suffering from a high grade of anemia.

4. The treatment should not be repeated within ten days.

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INTESTINAL OBSTRUCTION DUE TO THE ASCARIS LUMBRICOIDES*

BY M. D. LEVY, M.D.,
Galveston, Tex.

The frequency with which round worm infection is encountered may lead one to regard it with that contempt that familiarity often engenders. But that serious results may follow such infections was demonstrated by Perrett and Simon¹ in their report of a case of intestinal obstruction due entirely to a large mass of the *Ascaris lumbricoides*. In their article a review of the literature is given, and fourteen other cases are briefly mentioned. Recently, Heiser² reported another case of obstruction from round worms in a child six years of age; and at the point of obstruction a local peritonitis was beginning to form.

The case reported below is, we think, one of mild intestinal obstruction due to the *Ascaris lumbricoides*. Of some interest, aside from this point, is the fact that the same patient was in this Hospital sixteen months ago, at which time a diagnosis of "*Trichocephalus Dispar*, *Taenia Saginata* and *Ascaris Lumbricoides*" infection was made, and a thorough course of treatment was given.

*From the Department of Internal Medicine, School of Medicine, University of Texas.

CASE REPORT

The patient, a female, Mexican child of 3 years, well developed and well nourished, was brought to the Hospital with the statement that she had "worms."

Three months previously worms had been noticed in her stools. A worm syrup (name unknown) was given and large numbers of worms were said to have been passed. Nothing further was noticed until five days before bringing her to Hospital, when the child complained of a stomachache. Some medicine (?) was given to relieve this, was promptly vomited and in the vomitus were three worms, stated to be about twelve inches long, pink in color, and pointed at either end.

From this time 'till her entrance into the Hospital the child was very cross and irritable, complaining of pain in her abdomen. No movements of the bowels had occurred for two days. Food had consisted of crackers, milk and rice pudding. On entering it was noted that the abdomen was somewhat tender on pressure and tympanitic in the epigastrium.

Six-tenths gr. of calomel was given in divided doses, one-tenth gr. every thirty minutes, followed in one hour by 2 drachms sat. sol. mag. sulphate. No movement resulting from this, an evacuant enema was given the next day with fair results.

Many ova of the *Ascaris lumbricoides* were found to be present with a few ova of the *Trichocephalus dispar*. One-half an ounce of Epsom salt was given later on the same day, and a movement resulted which contained the ova mentioned, but no worms. The following morning no food was given and oil of chenopodium 3 gtt. on a little sugar was administered at 6, 8 and 10 A. M., followed in one hour by one-half an ounce of castor oil. The next morning a large mass of round worms was passed mixed with very little fecal matter. The worms, 142 in all, were coiled in a mass almost the size of a man's fist. No whip worms were found.

Until the passage of these worms a temperature varying from 100 to 102.2° F., with a pulse rate from 100 to 120, was noted. After the passage of the mass of worms the temperature assumed a normal level, the pulse varying from 80 to 98. At intervals of three days to a week, eight more courses of chenopodium were given. Many ova were obtained and seventeen more large worms were passed. In none of the specimens were we able to distinguish the whip worm, and in no specimen were *Taenia saginata* ova noted. The results from the last three treatments have revealed neither worms nor ova, but we would hesitate to say positively that the patient is, as yet, free from infection with either the *Ascaris lumbricoides* or the *Trichocephalus dispar*.

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AUTHORS' ABSTRACTS

Medicine

The Treatment of Malaria. William H. Deaderick, Hot Springs, Ark. The Medical Clinics of North America, Vol. 1, No. 6, May, 1918, p. 1609.

After discussing the various preparations of quinin, the author concludes that the dihydrochlorid is the most valuable salt, inasmuch as it is very soluble, causing fewer nervous and gastric symptoms in the patient and being very poisonous to the parasite. It is furthermore the most suitable preparation for intramuscular and intravenous administration. His experience with the tannate of quinin, which has rarely been employed in this country, has been favorable, particularly in children and in the diarrhea and dysentery complicating malaria. The intravenous method is coming into more general use and deservedly so. The author employs an apparatus consisting of two 10 c. c. Luer syringes connected by a stop-cock, one holding the quinin solution, the other normal salt solution. In giving quinin by mouth he employs the method of small doses at frequent intervals, the average dose being one grain an hour given usually two grains every two hours, three grains every three hours or four grains every four hours day and night. The specific should not be discontinued as soon as the temperature is normal, but should be kept up for at least two days longer in the quantity employed during the fever. Thereafter, about 15 grains on two successive days of each week should be given for at least two or three months to prevent relapse, even 'though the patient leave the malarial locality.

A Simple Therapeutic Test of Thyroid Function. Henry R. Harrower, Los Angeles, Cal. New York Medical Record, Vol. 94, No. 5, August 3, 1918, p. 196.

Attention is called to the possibility of securing a black and white record of the reaction of a given individual to certain uniform doses of thyroid extract, administered in a routine manner. The suggested doses are one-half, one and two grains of the U. S. P. Thyroid respectively, and four capsules of each dosage are given in a specified manner on each of three successive days,—twelve doses in all. The day before the test the patient records the pulse at suitable intervals and always under as nearly identical conditions as possible. This is repeated each day on a chart which is given to the patient with the capsules. The pulse recording is continued for two days after the capsules are finished and by the response, as indicated on the chart, it is quite easy to judge whether a given individual is "sensitive to thyroid" or in a state of thyroid irritability or, vice versa, whether their thyroid function is apathetic.

The test is not intended to be given in frank hyperthyroidism, but serves to differentiate various forms of goiter, to establish the early stages of minor thyroid insufficiency and to show the thyroid element, if any, in a pluriglandular syndrome.

TROPICAL DISEASES AND PUBLIC HEALTH

MORTALITY FROM MALARIA AMONG WAGE EARNERS, WITH SOME OB- SERVATIONS ON THE MALARIA MORTALITY EXPERIENCE OF THE GENERAL POPULATION

BY LOUIS I. DUBLIN, Ph.D.,

Statistician, Metropolitan Life Insurance
Company,
New York, N. Y.

No infection, except perhaps tuberculosis, compares with malaria in the extent of its geographic distribution or in its importance as a cause of physical disability among mankind generally. Fifty years ago, in the United States, malaria seriously affected nearly every state then fairly thickly populated. Noteworthy epidemics were recorded in Michigan, New Jersey, Pennsylvania and Massachusetts, as well as in the South, where the disease still lingers as a cause of considerable and preventable loss. The advance of sanitary engineering, the growth of populations and the subsequent filling-in of swampy areas have gradually eliminated the breeding grounds of the anopheles mosquito and have thus almost eradicated malaria from the Northern tier of states. The very largest registration of malaria in this mortality experience of wage earners was drawn from the group of persons insured in the Southern and Southwestern portions of the United States. It is significant to observe also that most of these malaria deaths occurred in the coastal, gulf and river plain of the South and nominally little of it on the Appalachian Plateau. The following table shows the geographic distribution of the malaria deaths in this mortality experience for the combined years 1914, 1915 and 1916, the only three years for which the data are fully available with respect to geographic incidence:

TABLE I

MORTALITY FROM MALARIA IN SELECTED SOUTHERN DISTRICTS, CLASSIFIED BY COLOR

Years 1914, 1915 and 1916 Combined—Rates per 100,000 Exposed

Experience of Metropolitan Life Insurance Company, Industrial Department

Area and District	Rate per 100,000	
	White	Colored
Southern Districts combined.....	9.3	41.6
Entire Metropolitan experience..	1.4	15.8
Birmingham, Ala.	5.8	35.9
Little Rock, Ark.	33.0	160.7
Augusta, Ga.	32.8	34.5
Columbus, Ga.	12.5	84.5
Macon, Ga.	28.5	36.2
Savannah, Ga.	11.1	130.3
Cairo, Ill.	44.4	54.2
Paducah, Ky.	54.6	73.2
New Orleans, La.	4.4	36.4
Poplar Bluff, Mo.	106.2	60.9
St. Louis, Mo.	2.0	9.4
Charlotte, N. C.	4.4	46.5
Raleigh, N. C.	15.4	50.9
Columbia, S. C.	17.8	21.7
Jackson, Tenn.	51.6	89.0
Memphis, Tenn.	33.5	105.9
Nashville, Tenn.	2.5	17.6

The 2295 deaths from malaria in the experience of the six-year period correspond to a death rate of 4.3 per 100,000 persons exposed. It should be remembered in considering this rate that whereas most of these deaths from malaria came from territory in the Southern and Southwestern sections of the United States, the exposure upon which the death rates are based covers all of the Company's policyholders in the United States and Canada. The Southern and Southwestern business of the Company in 1916 constituted approximately 20 per cent. of the total exposure. The total rate is therefore devoid of much meaning, although the figures for the incidence by color, sex and age do show interesting interrelations and are given in Table II.

Comparisons between the white and colored malaria death rates should be made with special caution. Most of the colored policyholders in the Company's experience are located in the South and Southwest, and this fact alone would con-

TABLE II

MORTALITY FROM MALARIA, CLASSIFIED BY COLOR,
SEX AND BY AGE PERIODDeath Rates per 100,000 Persons Exposed, 1911
to 1916Experience of Metropolitan Life Insurance. In-
dustrial Department

Age Period	Persons	White		Colored	
		M.	F.	M.	F.
All ages, 1 and over	4.3	2.1	1.9	17.8	22.1
1 to 4	6.5	3.7	3.7	42.9	44.4
5 to 9	3.2	2.2	1.7	16.6	17.3
10 to 14	1.9	1.1	1.1	5.4	13.4
15 to 19	1.9	.9	.7	9.9	12.9
20 to 24	2.8	1.2	1.2	13.8	14.5
25 to 34	3.4	1.4	1.1	12.4	14.7
35 to 44	3.8	2.0	1.3	11.2	16.1
45 to 54	6.5	3.3	2.6	24.4	29.0
55 to 64	10.0	3.9	4.5	41.4	54.6
65 to 74	16.0	8.4	7.0	81.9	89.3
75 and over	15.4	9.9	4.2	123.5	99.8

duce to a much higher malaria death rate than was recorded among white persons, the majority of which are located in Northern areas not affected to any great extent by malarial infection. The comparative malaria death rates presented in the introductory table to this section will give some idea, however, of the relative color incidence at least of deaths from malaria.

According to the age statistics, malaria mortality was nearly eight and one-half times as frequent among colored males and nearly twelve times as frequent among colored females as among the corresponding sex groups of the white population. Males of the white experience showed a malaria death rate practically 11 per cent. higher than did females of the same race group. Colored males, on the other hand, show a malaria mortality practically 20 per cent. more favorable than the rates for colored females. It is not possible to account for this reversal of the sex ratio of malaria mortality from the facts at hand.

The age characteristics of the malaria mortality curve are well defined. The highest rates are found at the two extremes of life, the minimum being reached at the period of adolescence. From age 20 onward the rates increased fairly regularly with only here and there an exception. A high mortality figure for the period of early childhood is to be noted.

Because of the sharp differences in geographic distribution of the two groups of exposed lives it is not deemed desirable to make a direct comparison between the death rates of insured wage earners and those for the general population in the expanding Registration Area of the United States. It may be of interest, however, to observe the very similar conformation of the curve of mortality by age and sex in the Registration Area during the period 1910 to 1915. This is offered below:

TABLE III

MORTALITY FROM MALARIA, CLASSIFIED BY SEX
AND BY AGE PERIODDeath Rates per 100,000 Persons Exposed, 1910
to 1915.Experience of the Expanding Registration Area
of the United States

Age Period	Males	Females
All ages, 1 and over	2.4	2.4
1 to 4	4.4	4.9
5 to 9	1.7	1.6
10 to 14	1.0	1.2
15 to 19	1.2	1.3
20 to 24	1.5	1.7
25 to 34	1.5	1.6
35 to 44	1.8	1.7
45 to 54	2.7	2.3
55 to 64	4.5	3.6
65 to 74	5.9	6.0
75 and over	13.1	11.6

At some of the age periods the death rates of the insured experience are higher and at others they are lower than the figures for the Registration Area considered by sex, but no significance may be attached to these ratios. The population mortality figures for the disease, however, are valuable in that they confirm the relation previously outlined in the death rates by age period, namely, a crest at both ends of the mortality curve and a minimum point between 10 and 20 years of age.

TREND OF THE MALARIA DEATH RATE—1911
TO 1916

The malaria death rate of 1911 was the highest and the rate of 1916 was the lowest in the industrial experience. During this period the rate declined without exception, the figure for 1916 being less than one-half that recorded for 1911. The decline was more pronounced for white than for colored persons and greater for fe-

males than for males in both color groups. The facts are shown below for each of the single calendar years:

TABLE IV

MORTALITY FROM MALARIA, CLASSIFIED BY COLOR AND BY SEX

Death Rates per 100,000 Persons Exposed—Single Years in Period 1911 to 1916

Experience of Metropolitan Life Insurance Company, Industrial Department

Year	Persons	White		Colored	
		M.	F.	M.	F.
1911 to 1916	4.3	2.1	1.9	17.8	22.1
1916	2.9	1.4	1.3	14.4	15.1
1915	3.5	1.7	1.8	14.3	17.7
1914	3.7	1.7	1.6	16.2	21.0
1913	4.5	2.1	1.8	20.5	23.5
1912	5.4	3.1	2.4	20.9	26.6
1911	6.1	3.2	3.0	21.2	30.6

INTENSIVE COMMUNITY WORK IN TENNESSEE*

BY E. L. BISHOP, M.D.,
State Board of Health,
Nashville, Tenn.

Health has been said by some one to be the physiologic functioning of a community. If this be true, and it would seem axiomatic, then the purpose of intensive community work must be to establish, in so far as possible, the physiologic function of that unit of man's life in relation to his fellow-man. In the accomplishment of this purpose, endeavor is divided into two fields of activity, namely: (1) Education, (2) Practical Demonstration.

In education we are confronted by two objectives: first, education of the masses, and second, education of the classes. Of these, naturally education of the masses is the main objective, and education of the classes only a point of strategic importance in its attainment. Even from a community standpoint education *en masse* is so exacting in its requirements and so infinite in its possibilities that we may well undertake it only with a full sense of our responsibility.

And please understand that this field of endeavor is not to be placed solely upon the field man, but that the responsibility

for its success runs down the scale of the whole health organization of the state from its highest officers to the carpenter assistant and laborers in the field.

In other words, I believe the duty of the central and executive heads of a state's health board is to prepare the way for the future work of the field man so that his part of the program will be that of the personal touch, post-graduate work, and the putting into practical demonstration of the principles already hammered into the community's mentality by the central board. If a state board of health undertakes by newspaper articles, in both metropolitan and county papers, by a mailing list which carries into a large number of homes the bulletins of that board, or by other means in which the mass of people may be reached, consider how much less difficult and how much more productive of results, is the effort of the field man. He is then dealing with a people to whom the principles of preventive medicine have at least been introduced, whereas, without this effort on the part of a state board, he is dealing many times with a people hedged about by ignorance, prejudice, and oftentimes by superstition.

Under the latter condition his lot is indeed a hard one. In Tennessee we have to deal with an ever-different class of people. Some counties are intelligent and progressive, while, perhaps, an adjoining county is the direct opposite. Again, some counties have a practical, intelligent county court, while in others county court rule closely resembles mob rule.

In the latter, I care not how successful the field man is with his first quarter's work, he stands but a poor chance of continuing that work unless he pleases perhaps one old gentleman who dominates the court.

Again, many of our counties are mountainous, without railroads, with but thinly drawn lines of communication, and with an illiterate population. In these, even educational work becomes difficult, and demonstration work is often beset by almost insuperable difficulties in the procuring of material or in its transportation. These are a few of the difficulties under which we labor in Tennessee.

*Read in Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

Class education is of importance in that we hope to reach the masses through the classes. Of the latter, the family physician is of as much value, if not more, than any other factor. No one expects him to be a trained sanitarian, but where post-graduate work is offered him in a practicable way he will form an important link in our chain of education. Dr. Rankin, of North Carolina, in a recent article, has outlined the State's duty and a very feasible way of fulfilling this duty to the general practitioner.

I believe it to be a part of the field man's duty to attend all county society meetings during his stay, to secure their endorsement, and to take part actively in each meeting where opportunity offers. He will always have room made for him. Special attention should also be paid to any social service organization or club of like nature. Should no such club exist, a community club should be organized. In short, we should try to secure organized effort from a community standpoint and to establish such a "sanitary sense" that health work will ever afterward be seen as an affair of community interest and not through the "tubular vision" of the individual perspective. Unless this be done, no matter how well the result shows on paper, we will have fallen short in attainment and will have secured but temporary improvement.

For unless we leave a correct sense of values in regard to health work, no matter what the per cent. of installation may be, the per cent. of maintenance will be a practical zero. Any one of many reasons may induce a man to install a sanitary closet, but only one will induce him to maintain it. That reason is a definite realization of the value of such a measure to himself and to his community. If this idea can be created as a community idea, one has indeed done well.

DEMONSTRATION

In the selection of areas in a county for actual demonstration attention must, of course, be paid to many factors in the community life. With these, we are all too familiar to require their reiteration here. Suffice it to say that I have found

it a good plan to restrict construction work to a rather limited area, but to extend the privilege of typhoid serum inoculation, school inspection work, and parasitic examinations to an area bounded only by the areas supplied by the local schools, and to let it be understood at the outset that the area for construction will have no bounds save those of co-operation and will extend in the direction of the most co-operation. In short, let the community be a flexible one and let the boundary be set by the people themselves. In this way may be stimulated the maximum of interest with the minimum of effort.

A factor of equal importance is the selection of proper assistants. In any one of many ways the assistant can make or mar the success of the campaign in his community. I have had no success with any class of assistants save a practical carpenter and he must be a man of resource, enthusiasm, energy, and a respected citizen of his community.

TYPES OF LATRINE

In a limestone country one of the great problems is the selection of a satisfactory latrine. To insure success from both standpoints, the one of installation and the other of future maintenance, it must meet popular approval. To meet popular approval, it must be inexpensive, almost odorless, and either self-cleansing or must require cleansing only infrequently. The container type has proven hopeless as a solution in Maury County. It was given a thorough trial, but was discarded. The pit latrine is obviously unsuited to limestone areas. To my mind the nearest approach to a solution is found in the so-called septic tank of the Kentucky type. Its advantages are too numerous to mention and its principal disadvantage is that of increased cost. However, a small family-size may be built at a material cost of \$7.80, which is not prohibitive. As a cheaper type we have adopted in Maury County a concrete pit, constructed as follows: A dirt pit is lined by a three-inch concrete wall well plastered to prevent leaking. Inside dimensions, 25 inches deep by 30 inches long by 18 inches wide. An inset is left around the margin one inch wide by two inches deep. A box is con-

structed of tongue and grooved flooring exactly to fit this concrete pit, and to extend above the insets flush with the top of concrete. The seat box rests between the wooden box and the margin or inset making this point flyproof. No. 9 wire handles are placed on the wooden box lining the pit to aid in its removal. Ventilation is secured by extending a flue from the top, and by screened holes at the base, of the seat riser, after the design of Dr. Lumsden. Only one sack of cement is required and material cost averages \$1.43.

This type has the advantage of being cheap in construction, fairly free of odor, and requiring infrequent removal of contents. Various modifications may be made, e. g., the use of a galvanized steel lining box, building two pits and using them alternately, etc.; but all these either require effort that is not apt to be made or run up the cost to the point where it is better to use the septic tank.

COLLATERAL WORK

No more important collateral work can be done in a county than the application of sanitation to county institutions. At least one should insist on a remedy for the gross errors found in the average county jail, workhouse, and county farm. These should be made object lessons to the county at large.

OBJECT

I have tried to present, either directly or by implication, some of the problems of intensive community work as met with in Tennessee. These have necessarily been presented alone, from the standpoint of the field workers, and not at all from the standpoint of executive heads.

DISCUSSION

Dr. B. E. Washburn, Raleigh, N. C.—I would like to ask if in this concrete receptacle the Doctor speaks of, he adds any lime or anything of that kind to aid in getting rid of the odor, and to aid in the putrefying of the fecal matter?

Dr. Bishop—As a matter of course, we use lime or ashes, rich dirt, well-rotted stable manure, or something of that nature. The flue is claimed to prevent odor, though we have a number of one type without a flue which are giving a little trouble. We are going back over them to install flues.

Dr. Ennion G. Williams, Richmond, Va.—I should like to ask on what principle of physics or chemistry the adding of dirt or ashes or other things reduces the odor?

Dr. Bishop—Dr. Washburn is present and I shall refer that to him.

Dr. Washburn—We have found in North Carolina that adding dirt, and especially horse manure, does markedly decrease the odor, and this is explained by the fact that you have a bacterial action taking place that overcomes the putrefying action.

Dr. Williams—I thoroughly agree with you that by adding manure you are adding a bacteria, but why should you add lime or dirt or ashes? What advantage is there in doing this?

Dr. Washburn—Ashes and lime added to the fecal matter cause it to dry with increased rapidity, curtail putrefaction and in this way act as a deodorant.

Dr. James Hayne, Columbia, S. C.—They recommend that you add yeast dissolved in warm water.

Dr. A. E. Campbell, Chicago, Ill.—We use a solution of one pound of lime and one pound of copperas to ten gallons of water, as recommended by Dr. Doty, of New York, and it destroys any smell,—even the odor from a dead horse.

Whenever our privy pits become full, or nearly so, we move the building, fill in over the waste with cobs, waste kindling and sprinkle with kerosene and add enough coal to make a hot fire, and it is surprising how the contents will vanish. If a hot fire is kept up the contents of an ordinary privy vault can be disposed of in two or three hours. I do not believe there is so much waste in these pits as appears. I made a careful examination of a privy vault in Iowa. It had been in use for sixteen years. It was well protected against the falling elements, as it was up against a building and under a large tree. The pit at that time was over four feet deep. I think if the pit and its contents are kept dry that a very large amount of it returns to dust, and the other evaporates. We put our bodies in the ground and they return to dust and to the God who gave them. Why should not the wastes from our bodies, which are over three-fourths water, anyway, evaporate and return to dust? I am confident this takes place much oftener than we think.

I do not believe there is as much danger from privy vaults as some would make us believe. I do not pretend to say that it is a perfect method of disposing of human excrement, nor is the water-flushed closet free from danger. Even the septic tank is not always safe. The overflow from one of our septic tanks ran into a public drainage canal and this canal passed through a pasture where cattle were grazing. They drank out of this canal and died, and the company had to pay damages. If this water killed cattle it would certainly destroy human life. I am convinced that we overestimate the dangers from privy vaults in soil such as we have in Northern Illinois, Iowa, Mississippi and Wisconsin. There are, however, places in Kentucky and southern

Louisiana where I would hesitate to recommend vaults unless water-tight; and the contents of such vaults should be destroyed by incineration and not superficially buried as is so often the case. Heavy rains that will wash away railroad curbing and dig deep holes in fields will certainly wash into streams human waste that is carelessly buried.

Dr. A. T. McCormack, Bowling Green, Ky.—I think if the Doctor had looked into a neighboring well he would have found why this vault was kept dry. In Kentucky it is a violation of the law for any railroad company to have a vault at present, and we enforce that law.

I am glad to see all of these attempts and trials at simplifying the privy question. Somebody will hit it, but I want the trials to be made outside of Kentucky, because I do not feel that I could have the nerve to go back into a community, where the experiment had been found obviously impracticable and unreasonable, and tell them that I had something that would work. The principle in the last analysis is that you will come to a septic tank.

Dr. Oscar Dowling, New Orleans, La.—I would like to ask Dr. Campbell if he added brush and other stuff to burn this up, and how he could get it in with the overflow?

Dr. Campbell—It was piled up about a foot above the ground.

Dr. Olin West, Nashville, Tenn.—There have been more things found in North Carolina than in any other state of the Union except one, and that is Kentucky. I want to say to you, Dr. McCormack, that we are trying out your own apparatus in Tennessee. We are doing better than you have been able to do yourselves, and we have found that the Kentucky privy, which is nothing more nor less than a partially open septic tank, is a most satisfactory appliance for the rural home. Dr. Bishop has had more success in the installation of these tanks than any worker we have had in the State. The cost is not prohibitive, as most men seem to think. I can not imagine how Dr. Dowling would arrive at a cost of anything like \$75.00, unless he puts jewels around them somewhere. But I believe Dr. Bishop's estimate of the cost is too low. As a matter of fact, I believe the estimate of the Chairman of the United States Public Health Service at Louisville is too low for general application. I think you will find that these tanks will cost on an average, for the general run of rural homes, approximately \$15.00 each. Of course, a great deal depends upon what you include in the cost. If you have a man at home to dig the pit and mix the concrete and pour it and help throughout the process of construction, the cost will be materially reduced. If you do as the Chairman suggests and have the health officer do it—which I do not believe ought to be done—the cost will be materially reduced. But to do it the way it ought to be done, and employ your own assistants, you will find the cost will run higher than Dr. Bishop estimates and very much lower than Dr. Dowling's estimate.

I want to relate this experience in connection with the use of these tanks. It has taught me a

lesson. In one little village in a remote county we had sixteen of these concrete Kentucky privies installed. Unfortunately, we are unable—and I think, Mr. Chairman, that this is one of the greatest weaknesses of the public health in the South—we are unable to follow up our administrative and educational work as we ought to do. They were unable to follow up this work in Jackson County, and though we left instructions with the people as to the use of these tanks, they did not carry out the instructions, and that is the big difficulty. I heard of this situation and I had one of our field men go through and investigate and see what was the trouble. He found the trouble was due to a lack of carrying out the instructions. At a total cost of thirty-five cents we put sixteen tanks into successful operation—the sixteenth had a crack in it. I want to make one point in connection with the installation of these Kentucky privies, and that is that in putting in your timber to hold your baffles do not use old timber that will absorb water. If you do, you will crack your tank. If you leave seasoned timber in there, it will bulge your tank and you will have a leak you will never get rid of.

Dr. Bishop (closing).—I did not expect to arouse all this discussion over a makeshift. All we use is the septic tank; that is, where a man owns his home or can furnish the money. As far as putting anything into the vault, the instructions say: "Keep a can of good rich earth in the closet and each evening put a thin layer over contents of vault."

As to the cost of the septic tank, Dr. Dowling's estimate is too high, according to the work in Tennessee, the only state in which I have had experience. Dr. West says mine is too low, but this is my material cost, not the labor. We are paying 70 cents for cement and 5 cents per foot for $\frac{1}{2}$ " in tile. But with the labor our cost would be higher.

Dr. Ferrell—How much labor does it take?

Dr. Bishop—One and a half days for a man and his helper. That is usually \$2.30 a day for the man and \$1.00 for his helper. That item is reduced by using the collapsible form of recent invention. If we have not that form, we use metal shields around corners to prevent the concrete from working in.

As to the future maintenance of closets, we have had some experience in follow-up work with the bucket type of closet, and it was so discouraging that we have given up that type and never expect to use another. We can not use the plain unlined pit at all.

Dr. Dowling—I want to say that when I said we built Kentucky closets I meant we built the pit and put up the building. At the prices we pay in Louisiana the cost is large. I know one railroad that would put them in on their entire system if they could build them for \$20.00 or less.

Dr. McCormack—I know a contractor who is building them for \$12.50. He is Senator Sam Robinson.

SURGERY

WAR, RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL.

THE STEM PESSARY: AN INSTRUMENT OF VALUE IN CERTAIN SELECTED GYNECOLOGICAL CONDITIONS

BY CHARLES EDWARD DOWMAN,
A.B., M.D., F.A.C.S.,
Atlanta, Ga.

The progress of scientific medicine in the past quarter of a century has been so rapid that, in our desire to adopt the new and approved methods of treatment, we are apt to overlook and forget some of the good things handed down to us from the past. This was brought home to me with respect to the use of the stem pessary when in 1912 I had it recalled to my attention by an article of Carstens.* Since that time I have been a consistent user of the stem pessary in the treatment of selected cases of amenorrhea, dysmenorrhea and sterility. My results in these selected cases have been truly gratifying, and I have failed to see verified the statement, which one encounters so often in textbooks on gynecology, that the stem pessary is an instrument of danger and of doubtful usefulness.

There are definite contra-indications to the use of the stem, and I have no doubt that the adverse criticism of this method of treatment is due to the fact that these contra-indications have not been properly considered. It is only in those conditions where the uterus alone is involved that the stem is indicated. I consider it nothing short of criminal to insert a stem pessary in an individual who gives evidence of pelvic infection. Also I consider it unwise to use the stem where the cervix is highly inflamed. In either case, especially in that of chronic pelvic inflammation, the stem is apt to cause an acute inflammation.

On the other hand, there are definite indications for this appliance. Certain

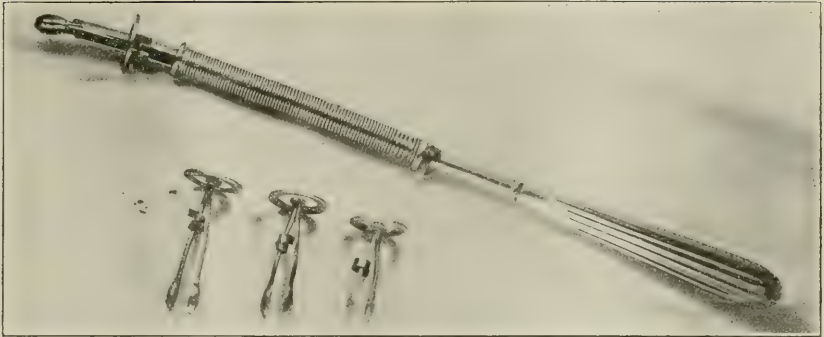
enthusiasts, however, are apt to overstep these indications and use the stem in menstrual disorders caused by extra-uterine disturbances, thus bringing into disrepute an otherwise valuable method of treatment.

It is said that 60 % of American girls suffer from dysmenorrhea. This, however, does not mean that the 60 % should be treated with a stem pessary. It is only in those cases of so-called obstructive dysmenorrhea calling for dilatation of the cervical canal that the stem is indicated. The ordinary method of dilatation usually gives relief for a period of from three to six months, at the end of which time the operation has to be repeated in order to give the patient further comfort. By inserting a stem pessary in such a case, however, and leaving it in place six to eight months, the patient is often given permanent relief; and, as a general rule, it is not necessary to repeat the procedure.

There are many cases of sterility in which one finds a small cervical canal and an underdeveloped uterus. If the pelvic condition is otherwise normal and an examination of the semen from the husband shows the presence of viable spermatozoa, the insertion of a stem pessary is indicated. In such cases the stem has the double value of causing a permanent dilatation of the cervical canal and of producing a type of uterine gymnastics which develops the uterine musculature. It is very interesting to follow such a case over a period of several months, noting from time to time the increasing size of the uterus. Under this method of treatment I have seen several cases of so-called infantile uterus develop to normal size in a comparatively short time. In six to ten months the stem may be removed, leaving a uterus well-adapted to the inception of pregnancy.

There are types of amenorrhea in which the stem is beneficial. Many young girls fail to menstruate at the usual time of puberty, although apparently well-devel-

*International Clinics, Twenty-second Series, Vol. 4.



Chamber's Stem Pessary and Introducer

oped and normal in other respects. Frequently an examination under a general anesthetic will reveal an underdeveloped uterus. It is well to leave such patients untreated until they are seventeen or eighteen years of age, unless symptoms calling for treatment arise. If such indications occur, the insertion of a stem pessary will usually bring on menstruation, in addition to developing the uterus. By leaving the pessary *in situ* for six or eight months the uterus will become increased in size, and menstruation will have assumed normal regularity. A second type of amenorrhea frequently encountered occurs in women who have already menstruated more or less, but in whom the periods are very irregular, appearing only at intervals of from two to six months. The insertion of a stem in such cases brings about a regularity which is indeed gratifying both to patient and physician.

The technique of inserting a stem pessary is perhaps the simplest of gynecological procedure. As a rule it is best to have the patient in a hospital and to administer general anesthesia. After preparing the patient as for an ordinary D. and C., she is anesthetized, the uterus grasped with a tenaculum, the cervix dilated with an ordinary uterine dilator and a pessary, of a size suitable for the individual case, inserted. If there is evidence of mild endocervicitis it is advisable to touch the cervical canal with iodine or carbolic acid before inserting the stem. The

type of stem pessary which I prefer is the Chambers spring pessary made of silver or aluminum. (See illustration.) After securing a proper uterine dilatation it is an easy matter to insert the pessary by means of an introducer. If there is a tendency to prolapse of the uterus, some form of supporting pessary is also inserted into the vagina. The operation is now complete. If there is no degree of displacement or prolapse it is not necessary to put in this support. The patient is kept in the hospital twenty-four hours, after which she is allowed to go about her usual occupation. Usually she will not be inconvenienced in the least, and, unless told, will not know that a pessary has been inserted. Coitus is not interfered with. Occasionally the patient may have some pains for several days, due to the contractions of a sensitive uterus. Under such circumstances the patient is kept in bed and given some form of sedative. The pessary is now left in position for a period of four to ten months, according to indications.

Out of a rather large series of cases in which the stem was used I have selected the following three cases to illustrate the results which may be attained in each of the above-mentioned conditions:

Case 1.—Illustrating what can be done in obstructive dysmenorrhea.

Mrs. T. J. D., age 21, was examined on September 8, 1915.

Complaint: painful and frequent menstruation, general lassitude, nervousness, and sterility.

Patient first menstruated at fourteen years of age. Up until about two months before examination her periods were always regular. During the day before and the first day of her period she has always had considerable pain, located centrally, in the lower part of her abdomen, causing her to remain in bed and seek medical relief. After the periods are well established the pain disappears. She has always had clotted blood during this time. Duration usually five or six days. In November, 1914, she was dilated and curetted, after which she was free from pain for about three months. During the past two months she has menstruated every two weeks, each period being preceded by the typical central pain. Duration of flow three to five days. During the past year she has lost fifteen pounds in weight. Has had an increasing degree of lassitude and has become nervous, at times almost hysterical. She has never been pregnant. (Husband at one time had a double epididymitis, since which he has had several examinations of his semen for spermatozoa with negative results.) It has been necessary to have medical attention at the beginning of every period since menstruation began. With the exception of the curetment in November, 1914, the treatment has consisted principally of hypodermics of morphia for the pain.

Examination disclosed an elongated cervix and a rather small os; an anteфлекed uterus of normal size; no endocervicitis; normal adnexa with the exception of the right ovary which seemed to contain a small retention cyst.

Under ether anesthesia the cervical canal was gently dilated and a Chambers stem pessary was inserted. The patient was allowed to go home the following day.

The result in this case was most gratifying. Her periods ever since have been regular (twenty-eight day type). She has had no discomfort whatsoever, and has not had to go to bed during menstruation since the pessary was inserted. The pessary was left for six months and was then removed. I saw her recently (September, 1917). She weighed more than she has ever weighed before, her periods continue to be regular and painless, and her nervousness and lassitude seemed to be a thing of the past.

Case 2.—Illustrating the value of a stem pessary in sterility.

Mrs. J. F. B., age 25, was examined February 24, 1916. Complaint: irregular and painful periods and sterility.

Patient began to menstruate at 13 years of age, her periods being always somewhat irregular, usually being delayed. Duration from five to six days. The flow has never been very abundant. During the first three or four days after her periods begin she has cramp-like pains in the middle of the lower part of the abdomen, which disappear after the flow has been well established. Patient has been married for one and a half years and has been very anxious to become pregnant. No preventive to impregnation has been used.

A vaginal examination revealed a uterus which is infantile in size, the uterine canal measuring only 5 cm. in length. There is a slight tendency to retroversion. The adnexa are normal. An examination of her husband's semen gave the presence of viable spermatozoa.

After cocainizing the cervical canal and giving the patient one-eighth grain of morphine hypodermically, the cervix was gently dilated and a small Chambers stem pessary inserted. On account of the mild retroversion a supporting pessary was placed in the vagina.

On March 23, 1916, the following note was made: Patient had considerable bloody discharge for one week after the pessary was inserted, after which she had no further trouble of this kind. During the past two weeks her backache has been much better. No regular menstruation as yet. This morning patient felt a sharp contraction of the uterus which expelled the pessary. Today a larger pessary was inserted. Uterus found in almost normal anteфлекed position. The uterine canal measured six and a half cm. in depth.

June 19, 1916. The patient came to the office complaining of severe backache. Some yellowish vaginal discharge. Stem pessary removed. Her periods are now regular and painless.

June 26, 1916. The cervix on examination appears to be normal. The uterus in the past four months has undergone marked development. Pessary of medium size inserted in cervical canal.

August 15, 1916. On account of excessive uterine hemorrhage the pessary was removed.

March 15, 1917. Patient complained of bleeding from the uterus, three days' duration, coming on two weeks after her last period. Her periods during the past year had been regular, of twenty-eight day type. No pain. Vaginal examination showed the cervix to be normal in appearance. The uterus is anteфлекed and seems of fairly normal size.

June, 1917. Patient came in complaining of having missed her last period. She said that her breasts were rather painful and seemed to be enlarged. An examination disclosed a uterus which seemed to be of normal size and perhaps somewhat softer than normal. Pregnancy was suspected but could not be diagnosed definitely.

August, 1917. A letter from her husband announced that she was pregnant and expected to be confined in January, 1918.

Case 3.—Illustrating the value of the stem pessary in a case of periodic amenorrhea.

Mrs. H. F. H., age 27, was examined June 21, 1916. Complaint: irregularity of menses, with pain during the first day, and nervousness before her periods.

First began to menstruate at the age of fifteen. Her periods have always been irregular, frequently skipping from two to six months. October, 1912, was in an automobile accident, following which she had suppressed menses of four or five months' duration. During 1915 she menstruated approximately every 49 days. Dur-

ing 1916 she menstruated January 29, March 27, and May 3. She always has some central pain during the first day of her periods.

A vaginal examination disclosed an elongated cervix. The uterus found to be retroflexed, the fundus lying at a lower level than the cervix. The adnexa were normal.

September 17, 1916. The cervix was dilated and a Chambers stem pessary inserted. A laparotomy was now done and the uterine displacement corrected by means of a modified Gilliam round ligament suspension. The tubes and ovaries were found to be normal.

A few days following the operation the patient menstruated normally. The pessary was allowed to remain until February, 1917, during which time her periods came on every twenty-eight days, were of normal flow and duration, and were absolutely painless. After removing the pessary her periods began to be somewhat irregular, although they were not attended by pain.

June 28, 1917. Patient came in with a request that I put in the stem pessary again, as she felt so much better before I had removed it than she had since. The pessary was therefore again inserted after giving an eighth of a grain of morphine and cocaineizing the cervical canal.

Patient wears the pessary in the cervical canal and menstruates regularly every twenty-eight days. Each period seems normal in every respect, the patient having no discomfort whatsoever. It is my intention to let her wear the stem for six or eight months before removing it.

In this case it might be argued that the correction of the retroflexion is responsible for the improvement rather than the presence of the stem pessary. As a matter of fact I feel sure that the suspension operation has improved the patient's general health, and has had some influence in the regulation of her menses. That the stem pessary has been of value, however, in assisting in this regulation, is shown by the fact that as long as it was worn her periods came at regular intervals; while after its removal she again began to go a week or two over her regular menstrual time. This, however, has been corrected since reinserting the pessary and the patient now menstruates regularly every twenty-eight days.

In conclusion I wish to emphasize the following:

1. The stem pessary should not be discarded from our gynecological armamentarium.
2. When properly used it is not dangerous.
3. It is of value in selected cases of dysmenorrhea, amenorrhea, and sterility, in which the uterus only is involved.

4. It is contraindicated where there is severe endocervicitis or pelvic infection.

5. It should never be used where pregnancy is suspected.

1622-23 Candler Bldg.

EXTREME GASTROPTOSIS CLINICALLY CURED BY ROVSING'S OPERATION*

By J. T. ROGERS, M.D.,
Savannah, Ga.

Gastropexy as done by Rovsing, of Copenhagen, is employed only in extreme cases and after every other known treatment has been used and failed. He did his first operation for gastroptosis in 1897, but found later that the operation had been performed once before by Duret, of Lille, France. Duret did the operation a little differently from Rovsing, however, and the operation as done by Rovsing seems to give better results than any other devised for this disease. But it seems not to be a very popular one among American surgeons.

The manner in which the operation is done by Rovsing is to pass three strong silk threads in and out through the serosa covering of the anterior surface of the stomach, each thread being parallel with the axis of the stomach, about $\frac{1}{2}$ inch apart and leaving the pyloric part free. The first thread is passed just under the lesser curvature; the second, two centimeters below this; the lowest, three centimeters above greater curvature. Sutures were brought out through the abdominal wall on each side three or four centimeters from central lining. The serous surfaces were scarified with a sharp needle that adhesions might be formed. The wound was closed and covered by a glass plate, which was wrapped with sterile gauze, a little larger than the wound, and the three silk threads tied over this. These threads were allowed to remain four weeks, and were then removed.

We have had with Dr. White, of Savannah, six cases in which the Rovsing operation was done and these cases were operated upon after all other means such

*Read before Southern Gastro-Enterological Association, Memphis, Tenn., Nov. 12, 1917.

as diet, rest, abdominal support, and bandages had failed to give relief. They had all complained of "stomach trouble" from ten to twenty years.

CASE REPORTS

Case 1.—Miss C., operated upon April 1, 1915, was 38 years old. Family history negative. Had diseases of childhood; no severe illness afterward until the present trouble began fifteen years ago. She suffered with attacks of nausea and vomiting and extreme constipation; had to live on the very simplest diet; was extremely emaciated; had a heavy, dragging sensation in the abdomen, right kidney ptosed, second degree; and her menstruation was extremely irregular. She would go at times for months without any sign of menses. For two or three years she had spent almost half her time in bed.

She has gained twenty-two pounds and does not have to go to bed with nausea and vomiting any more, and enjoys better health than she has for fifteen years.

Case 2.—Mrs. A. had suffered with indigestion for ten or twelve years; had the usual symptoms of a gastropotosis in severe form, was emaciated and had been running a temperature of 99 to 100° for eighteen months; was operated upon one year ago and now writes: "I am glad to write you that my health is very much improved. The little temperature that I had for about eighteen months is all gone and am gaining strength gradually all the time. It is getting to be once more a pleasure to live."

Case 3.—Mrs. B., operated upon May 21, 1917, was aged 42 years. Family history negative. No severe illness until the present trouble. Has had five children; had trouble with her stomach for fifteen years; and was greatly emaciated.

While it has hardly been six months since the operation, her health is improved and is continuing to improve.

Case 4.—Mr. L. was operated upon September 22, 1917. He is improving rapidly.

Case 5.—Mrs. W., operated upon about a year ago, improved very rapidly for three months and seemed to be almost well, when symptoms of pellagra appeared and she began to go down rapidly and died within a few months of pellagra.

This case we report more in detail because of the extremely interesting history and because of the mistakes in diagnosis:

Case 6.—Miss P., March, 1916, aged 33 years.

Family History.—Grandparents on both sides lived to be between 75 and 80 years of age. Mother's family rather frail; father's family robust. Mother's father had bad throat, stomach, and skin trouble two years before he died. Skin trouble could not be healed up. Father died at 68 of paralysis. Mother 55 and in good health. One uncle on mother's side had a bad skin trouble that could not be healed up, but lived to be about 55 years of age. Has one sister 40 years old, who is fairly strong, but who has some throat trouble. Three brothers, all frail.

Personal History.—Had diseases of childhood and these diseases went harder with her than with the other children. Menses began at 14 and have

never given any trouble. Began to have violent headaches at 16, but was relieved with glasses; had bronchitis at this time for two weeks; was in bed. Had no typhoid nor any other severe illness.

Present Trouble.—Began at 22 to have fever, temperature running from 99 to 100° at this time and was treated by several physicians for one year without any favorable results, and her disease was pronounced tuberculosis.

She was sent to a sanatorium the second year and remained five months. Temperature was the same when she left as it was when she went, and she had not gained in weight. Never had any cough except at times a slight hacking cough. Her sputum was examined by the State Bacteriologist four to six times. No tubercle bacilli were found, but Vincent's bacilli and spirchetes were found on each examination. She returned home and was treated by different physicians, year after year, with no improvement. Physicians continued to claim that her trouble was tuberculous. Her family were all afraid of her, making her life doubly miserable.

Her weight at 22 was 155 pounds. When she came to us it was 110 pounds.

In appearance the patient was tall and slender. Her facial expression was one of suffering and anxiety.

Physical Examination.—Pupils respond to light. Teeth, gums and throat in good condition; also ears and nasal passages so far as we could tell. Lungs fairly good. Small spot on left side with little roughness to breathing sound. Expansion 1½ inches. Heart sounds clear.

BLOOD PRESSURE

	Systolic	Diastolic	Pulse
Right side	115	75	40
Left side	115	70	45

Stomach below navel. Liver, kidneys and spleen in normal position. Very little tenderness over abdomen. Hemoglobin 85%. Temperature at 11 A. M., 99.8°. Pulse 70. Respiration 22. Appetite good. Sleeps well. Bowels irregular. Urine normal. Constricted feeling or choking sensation in throat. Spitting of ropy mucus. Passing of pieces of membrane from bowels. Very few things she could eat without discomfort. Passes at times hard, dry feces that seem to have been in bowels many days, yet bowels may be moving regularly. Nausea two or three hours after eating. Sometimes vomits a great deal of mucus but not much food. Heavy dragging sensation in lower abdomen.

Ewald's test meal showed:

Odor, none.
Blood, none.
HCl, 14.
Volatile fatty acid, 0.
Lactic acid, 0.
Comb. acids, 6.
Total acids, 20.
Pepsin, plus.
Mucus, small amount.

Diagnosis.—Membranous colitis with gastropotosis.

Treatment.—Patient was put on treatment and sent home. Improved for five months, gaining 22 pounds, but then began suddenly to lose weight.

We wrote her to come back. We had a Wassermann made and found a three-plus positive. We had her given Salvarsan and iodids. She improved again for three months and returned with very much the same symptoms, except the throat trouble, which was almost relieved. Her digestion was also greatly improved. She was still having some fever and was weak, nervous and restless.

We now had an x-ray made and found the stomach resting upon pubic bone and about 8 inches redundant transverse colon.

Rovsing's operation for gastropexy was done and the redundant portion of the colon was stitched to the stomach and a tuck was taken in the redundant portion to make lumen smaller, as this portion was greatly dilated. She was operated upon in September; and the patient is now up and about and feels perfectly well, with the exception of a little tenderness about the incision. We are keeping up the iodids and expect to do so from time to time for the next two years, when we believe, from past results, that she will be well. Her temperature is normal and has been since the operation. Bowels are regular without medication.

The appendix was removed and was found to show signs of disease. The mistakes that were made were in not having a Wassermann made and x-ray used on her first visit to us. The reasons why we did not have this done were that, in the first place, we thought we had found her real trouble in the gastropexy and the membranous colitis; second, because she was a charity case or nearly so, and we hesitated to call on an x-ray man in such a case when we felt reasonably sure that we understood the condition.

The lesson learned through this case is *never* to make a diagnosis upon any chronic case that has been treated by reputable men until every known means of making a diagnosis has been used, including a Wassermann and x-ray, regardless of the patient's financial circumstances. We should not jump at conclusions, but do our best or not do at all.

AUTOSEROTHERAPY: EXPERIMENTAL WORK WITH HYDROCELES: REPORT OF CASES

BY E. P. MERRITT, M.D.,
Instructor in Genito-Urinary Surgery,
Atlanta Medical College (Emory University); Urologist to the Georgia Baptist Hospital,
Atlanta, Ga.

The question of autoserotherapy, for some unknown reason, has not acquired a very prominent place in modern therapeutics, possibly because the clinical experi-

ence is limited, or because there has been failure in a few attempts as a cure.

The time is rapidly approaching, however, when therapeutics other than drugs will be of untold value. Experiments along that line are being carried on daily. We now know the therapeutic value of most drugs and know what to expect when they are given; and the value of many meet the desired expectations, but, except for a few, can we say they cure?

The pathology of hydrocele is well-established, but the underlying causes in many cases may not be definitely known. In the examination, fluid is found and diagnosis of hydrocele is made. What a "cinch!" The etiology should be studied and treatment instituted accordingly for the future welfare of the sufferer.

It has been my privilege in the past year or so to observe many cases of hydrocele both in private practice and in the clinic. In that time I have noticed three distinct types,—namely, the simple or ordinary obstructive type, the tuberculous and the syphilitic. The simple and syphilitic give about the same symptoms, for instance, pains in the back, perhaps some pain in the sac and a general uncomfortable feeling. The tuberculous type gives the same, plus frequent and constant desire to urinate, with nodular deposits on epididymis, etc. The diagnosis and symptoms will not be dealt with at this point.

There are many different methods of treatment well known to the profession, but I shall take up one that is not described in text-books nor anywhere else that I can find, and that is the autoserotherapy. After searching the literature, only two men mentioned vaccination in connection with hydrocele, their method differing slightly from mine. Caforio in the *Journal of the American Medical Association* for October 26, 1912, states that the autoserotherapy treatment is harmless, and that he found it effectual in 45% of cases treated. He gives no dosage and says very little more. Mallannah, in the *British Medical Journal* for January 22, 1912, in "A Vaccine Treatment of Hydrocele," describes a method whereby he injects a sterile vaccine into the tunica with good results.

I shall report only a few cases in detail:

CASE REPORTS

Case No. 1.—J. B. B., age 14, colored, was examined November 22, 1916.

Family history is of no importance.

Past history includes the usual diseases of childhood. There was no other sickness until six years ago. Cough troubles him constantly; he has night sweats and is troubled with frequent desire to urinate, getting up several times at night. No gain in weight or size is noticeable for long time.

He noticed a swelling beginning in the right side of scrotum, gradually enlarging. Urine almost uncontrollable and frequent.

Examination showed that he was small for his age and he looked sick. No glands enlarged; no elevated temperature; pulse normal; the heart and lungs normal; and the genitals were normal except a hydrocele the size of a large orange on the right side with nodulated spots on the epididymis.

Wassermann negative. Von Pirquet's skin test was positive for tuberculosis.

Urine milky looking and negative except for few pus cells.

Diagnosis of tuberculous hydrocele was made.

Blood-tinged fluid was withdrawn and examined for tubercle bacilli and spirochetes with negative results.

Treatment and results: No medicine was given. November 28, 12 c. c. of blood-tinged fluid was withdrawn from the sac and injected immediately into the gluteal muscles.

December 11—Feels better. Urinates less frequently. Ten c. c. withdrawn and injected into gluteal muscles.

Dec. 20—Ten c. c. of fluid withdrawn and injected into gluteal muscles. Noticed the fluid was clear and amber colored this time. Sac somewhat smaller. He now gets up only three times at night to void.

December 29—Ten c. c. of fluid withdrawn and injected into gluteal muscles. A great change was noted this time. He does not get up at night to urinate. Sleeps all night; no cough; no night sweats; looks improved; feels better; appetite good; and has gained 5½ pounds. Sac almost normal.

January 3, 1917—Sixteen c. c. of fluid withdrawn and injected into gluteal muscles. Still improving.

January 15—No fluid in sac. Feels well.

January 25—Fifteen c. c. of fluid withdrawn and injected in gluteal muscles.

February 14—Fifteen c. c. of fluid withdrawn and injected into gluteal muscles. Patient looked taller and stouter and had gained 14 pounds. Sac very small.

August 1—Patient seemed well; no symptoms, and had gained considerably in weight. All urinary disturbance had passed away.

Case No. 2.—E. B., age 64, colored, presented himself for examination May 1, 1917.

Family history was negative.

Past history showed the usual diseases of childhood and that he had been very healthy until 12 years ago. His back was "sprained" in an accident, but soon felt well again. A few days

afterward he noticed an enlargement in left side of the scrotum with full heavy feeling in the back and the sack gradually enlarging. He consulted a physician five years ago and hydrocele was diagnosed. It was tapped and a "great quantity of fluid" with drawn, but soon became enlarged again, and was tapped once yearly afterward with carbolic acid injections. It returned each time.

Examination: There were no physical abnormalities of interest except the hydrocele. Flash-light behind the sac showed clear fluid with the quantity estimated at 1,000 c. c. Twenty cubic centimeters were withdrawn and sent to the laboratory for examination, especially for spirochetes and tubercle bacilli. The fluid was negative bacteriologically.

Diagnosis: Simple hydrocele.

Treatment and results: May 1—Fifty c. c. were withdrawn and injected as described. The sac became greatly reduced.

May 29—No fluid in sac. Patient was advised to return a week or so later, but did not do so.

August 1—Sac is still free of fluid. This case was more or less marvelous, as only about 100 c. c. had been withdrawn from a sac that contained at least 1,000 c. c.; and a quick disappearance of the entire quantity followed.

Case No. 3.—S. N., age 17, white.

Family history was of no importance.

Past history usual diseases of childhood. Healthy until two years ago, when he noticed a swelling of both sides of the scrotum with pains in his back and in the region of cords, and also a frequent desire to urinate.

On examination, the only abnormal condition to be encountered was a large sac on both sides. General enlargements of the inguinal, epitrochlear and post-auricular glands were also present. Light behind the scrotum demonstrated very plainly a fluid of clear character in the left side, but it was dim and thick in the right. The cord on the right was swollen and tender. The urine was clear.

Diagnosis: Syphilitic or predisposing syphilitic hydrocele, plus hematocoele.

November 18, 1916—Fifteen c. c. straw-colored, clear fluid was withdrawn from the left side and 20 c. c. of bloody fluid from the right side. Twenty minims of 90 % carbolic acid was injected into the right side. Two weeks later the sacs were the same size, except the left was very much enlarged.

December 28—Left side tapped and 20 c. c. withdrawn; and 20 minims of 90 % carbolic acid injected.

January 15, 1917—No improvement, so he was put on iodid of potash and mercury.

February 1—Same size. Ten c. c. of fluid was withdrawn from the left side and injected into the gluteal muscle.

February 12—Left side almost normal; right, the same size. At this date 10 c. c. from the right side was injected into the gluteal muscles.

February 24—Both sides were almost normal size. Frequency of urination has disappeared.

April 1—Both sides are normal. There is no fluid in either and otherwise normal.

July 1—Gained in weight and no appearance of the old trouble.

In conclusion we wish to state that this form of treatment is not so sure to cure every hydrocele as the open operation, nor possibly as the carbolic injection, but in many cases this treatment should be given first even if the hydrocele is not cured. Especially does this statement apply to the tuberculous and syphilitic types. In many instances the hydrocele will be cured, and in a large percentage will constitutional improvement be noted. This was especially demonstrated in Case No. 1 of the tuberculous type.

There may be advanced a better method of treatment or more effectual plan than this, but if so, that is yet to be offered.

Especial attention is called to the fact that there is no reaction from large or small doses. Therefore, it seems to be harmless. The writer has treated about twenty cases by this method, about half of that number being irregular patients, possibly coming only once or twice; and therefore the end results are not known.

We have not much faith in the treatment dealing with the ordinary simple hydrocele, but have cured two or three cases as illustrated by Case No. 2. However, with the infective type, there is a fairly good prognosis in almost every instance. To be conservative is the only method worth while in any endeavor not thoroughly standardized.

This method has been very satisfactorily used in my hands for one year and a half, and my belief is that those not cured were benefited—certainly not hurt—constitutionally by the treatments. Selected cases are especially indicated for this form of treatment.

The dosage varies with the size of the patient. I have seen no harm from large nor small doses,—for a man usually 50 c. c. once a week. Those that improve usually do so by the time two or three doses are given.

The fluid should be withdrawn from the sac after aseptic precautions have been taken and then immediately injected into the gluteal muscles. I have had the hydrocele fluid examined a number of times for different forms of infection and only one time were tubercle bacilli demonstrated.

It seems to be a difficult task to find bacteria in the fluid, even if they be present; perhaps more so than other fluids of the body.

Great results may be hoped for from this treatment; but I would say be cautious; be patient; know the existing condition thoroughly; watch your results closely; and if all are not cured by the treatment, do not give up in disgust, as in all medical experience few things are sure to work exactly right every time.

DOUBLE, RECURRENT AND BILATERAL TUBAL PREGNANCIES—AN ANALYSIS OF 89 CASES REPORTED IN THE LITERATURE AND THREE UNPUBLISHED PERSONAL CASES

BY AIME PAUL HEINECK, M.D.,
Chicago, Ill.

Extra-uterine pregnancy is one of the most important maladies of the child-bearing period. It occurs in all races, but appears to be less frequent in the colored—"four Negroes in 169 cases." The condition, though more frequently recognized now than heretofore, is, nevertheless, often overlooked, misdiagnosed and, therefore, mistreated. A more complete understanding of tubal gestation will lead to the saving of lives and to the prevention of invalidism.

Tubal gestation, by far the most common variety of ectopic pregnancy, is single, double, or multiple; unilateral or bilateral. It may be a woman's first and last conception; it may be preceded by a long period of infertility; or it may end a woman's child-bearing career. Tubal pregnancy may co-exist with a uterine pregnancy. It can occur in the absence of other pathological states of the pelvic or other organs. Its occurrence in one tube does not protect against its occurrence in the opposite tube, and does not absolutely protect against its recurrence in the same tube.

To facilitate the task of future investigators, I have collected, studied and analyzed all cases of double and bilateral tubal pregnancies reported with sufficient data

in the English, French and German literature from 1908 to 1916, inclusive. Only original reports of cases in which the diagnosis was verified at operation were considered.

Double tubal pregnancies are almost invariably bilateral; exceptionally, unilateral.

Double and bilateral tubal pregnancies are either simultaneous or recurrent. If simultaneous, both conceptions begin at or about the same time. Both gestations may develop, or one may be interrupted and the other continue. Usually the two fetal cysts differ in size and destiny. The recurrent type is by far the most frequent (63 cases). Almost always the recurrence is in the opposite tube.

Double and bilateral tubal pregnancies can occur at any period of the child-bearing age. We do not know how often tubal pregnancy recurs; we do not know why it occurs. Authors are not agreed as to the frequency of recurrence.

One ectopic pregnancy is not necessarily followed by another ectopic pregnancy. Normal pregnancies may be sandwiched in between two extra-uterine gestations.

Months, or even years, may elapse between the incidence of pregnancy in one tube and the lodgment of an impregnated ovum in the opposite tube.

In our collected cases the interval between the two tubal gestations varied from three months to nine years.

Double, recurrent and bilateral tubal pregnancies occurred in women who had never borne living children. Tubal pregnancy has recurred in women who had borne one living child, two, three, four, five, and six children.

Double, recurrent and bilateral tubal pregnancies like other varieties of ectopic gestation not infrequently occur in women who though frequently exposed to pregnancy, have remained sterile.

The cause of tubal pregnancy, whether single, double or recurrent, is not definitely known. No causative factor present in every case has been demonstrated. Not uncommonly, co-existing pathological states are found. Are these pathological states coincidental or etiologic factors? With the data at hand, a positive answer is not possible.

Inflammatory and other degenerative changes of the tubal wall do not possess the important etiological role formerly attributed to them. Though all conditions that obstruct, delay or hinder the progress of the impregnated ovum to the uterus favor the occurrence of ectopic gestation, still many cases occur in which the existing tubal gestation excepted, there is a total absence of pathological, tubal or ovarian, changes, congenital or acquired. Actual examination at time of operation has firmly established the fact that an inflammatory condition is not present in all cases.

It has been believed that the predominant cause of tubal pregnancy is salpingitis, post-abortion, post-partum or gonorrheal in nature, with resulting destruction of the tubal ciliated epithelium. "I have been able to demonstrate the presence of cilia in nearly every pregnant tube which I have examined" (Williams). In some cases, the presence of co-existing pelvic pathological states is recorded,—cyst of parovarium, ovarian cyst, polycystic degeneration of the left ovary, etc.

All our collected and personal cases were primarily either interstitial, isthmic, or ampullary. These were unilaterals. All the others were bilateral. These 92 cases represent 285 tubal gestations. Not one of these pregnancies, either first or second, went to full term.

Sixteen gestations were subjected to operative relief previous to tubal abortion or tubal rupture. Thirty-two tubal gestations terminated in abortion; seventy-five, in rupture. In the remaining cases, the termination is either not recorded or not definitely stated. Termination depends in great part upon the implantation site of the ovum. Thus in the isthmic form, this portion of the tube not admitting of much distention, early rupture is the rule. In the ampullary form, the tubal wall offering less resistance to the growth of the ovum, abortion is the rule. Tubal abortions are due to rupture through the capsular membrane. They are incomplete or complete; the incomplete being the more common. Complete tubal abortion implies complete expulsion of the ovum, membrane and contents, into the peritoneal cavity by way of the abdominal ostium

or tube. In complete abortion, the hemorrhage is usually slight. In the incomplete type, there is a partial loosening of the ovum from the tubal wall and only parts of the ovum pass into the peritoneal cavity. In incomplete tubal abortion, the hemorrhages recur as evidenced by repeated colicky pains, laminated clots, etc. Tubal abortion has been appropriately designated by some authors as intra-tubal rupture.

Rupture, extra-tubal, occurs at or near the placental site, taking place either into the peritoneal cavity or between the folds of the broad ligament. Primary rupture of the ovum, in by far the larger number of cases, occurs previous to or about the eighth week. In a few cases it occurs later.

It may involve any portion of the tube, isthmic, middle third, ampullary, and vary in size from a pin-point to a tearing asunder of the entire tube. Even a pin-point rupture may cause a fatal hemorrhage. In the only case of this series in which hemorrhage apparently caused death, the rupture was a small orifice on the free portion of tube through which chorionic villi projected. The tubal tissues in contact with the ovum offer slight resistance to the fetal elements and, being early invaded by the chorionic villi and fetal cells, they soon undergo degenerative changes. The tubal wall is weakened partly by the continuous and gradually increasing distention exerted by the growing ovum and much more so by the erosive action of the fetal elements upon the maternal tissues. The tubal resistance being thus impaired, rupture is easily brought about either by direct perforation by the growing villi or by any sudden access of pressure, such as is determined by the sudden opening of a large vessel, by the clogging of venous channels, or by slight external violence as vaginal examination, coitus, fall, etc.

Bilateral tubal gestation may terminate in tubal rupture in one tube and in tubal abortion in the other.

Tubal abortion and tubal rupture, be the latter intra- or extra-tubal, are associated with moderate or profuse internal hemorrhage, either into the lumen of the Fallopian tube, between the folds of the broad ligament, or into the peritoneal cavity.

When hemorrhage takes place into the free peritoneal cavity, a practically limitless space, the patient may bleed to death without a drop of blood's appearing externally. Blood extravasated in the lumen of the tube, between the folds of the broad ligament or in the peritoneal cavity, either undergoes absorption, coagulation, organization, cyst-formation, or suppuration.

FATE OF THE OVUM

The ovum lodged in a tube being always poorly fixed and poorly nourished, most tubal pregnancies come to an end previous to the eighth week. When tubal gestation ends this early, be the termination due to ovular "apoplexy," tubal abortion or tubal rupture, the ovum is absorbed. This is the fate of young embryos extruded into the peritoneal cavity, if they be not removed by the surgeon. When, after tubal abortion or tubal rupture, the placenta retains some tubal implantation and contracts new attachments to the pelvic wall, rectum or other viscus or viscera, the placental circulation thereby continuing, the pregnancy becomes tubo-abdominal or tubo-peritoneal in type. Absorption is more difficult after the third month.

In many operations for early tubal gestation, the embryo is found in the tube or in the abdominal or peritoneal cavities. Ovular debris, placenta, decidual cells, fetal nests, chorionic villi, etc., are more frequently found at time of operation than fetuses.

The symptoms of tubal gestation, like those of uterine gestation, may be classified into presumptive, probable and positive. The positive symptoms of pregnancy,—fetal heart sounds, active and passive fetal movements, and palpation of fetal parts,—are usually not detected until after the fourth month of gestation. Now, as 81 % of tubal gestations terminate before, at or about their eighth week, it can be seen that the positive signs of tubal pregnancy, corresponding to the positive signs of uterine pregnancy, are rarely present and, therefore, rarely detected. In not one of our cases were any of the positive signs of pregnancy present.

Previous to tubal abortion and to tubal rupture, presumptive signs of pregnancy,

such as amenorrhea, nausea and vomiting, bluish discoloration of vaginal walls, pigmentation and striae, and urinary disturbances, were noted in many of the cases. Amenorrhea is so constant a symptom in tubal pregnancy that its absence is misleading.

Other presumptive symptoms such as nausea and vomiting, colostrum secretion, milk secretion, bluish discoloration of the vaginal wall, enlargement of breasts, etc., are less frequently recorded.

Among the probable signs, the most frequently noted in our series were changes in size, consistency and position of the uterus. "The existence of an enlarged uterus at any time during the child-bearing period should be regarded as presumptive evidence of pregnancy until such a possibility has been conclusively eliminated" (Williams).

The most characteristic symptoms that confront the clinician are those determined by tubal rupture or by tubal abortion. Both of these accidents are associated with pain and with internal hemorrhage, the extent of which determines the gravity of the case. Very often the patient first comes into the hands of the physician some time after she has recovered from the primary shock due to tubal rupture or tubal abortion.

In tubal abortion there may be acute, severe, cramp-like pain, limited to the pelvic region or referred to other portions of the abdomen; there may be absence of pain. In many cases of tubal abortion about the only symptom we have is abdominal pain and uterine colic preceding and accompanying the expulsion of the decidual cast. In tubal rupture, the pain is intense, agonizing, may cause the patient's collapse. It is most marked in the lower abdomen and may be referred to the right side, to the left side, to either kidney region, to the rectum, epigastrium, umbilicus.

Coincident with the lodgment and development of the ovum, the uterus, during the first three months of tubal gestation, undergoes hypertrophy and its endometrium becomes converted into a decidua similar to that observed in uterine pregnancy. Soon after the death of the fetus, the decidua is thrown off, being expelled

in shreds, or as a triangular cast of the uterine cavity, with dimensions corresponding to that of the hypertrophied uterus.

Though tubal pregnancy and especially bilateral tubal pregnancy are frequently operative discoveries, the diagnosis being rarely made previous to tubal abortion or tubal rupture, the following symptoms, taken in conjunction with a suggestive history and suggestive pelvic findings, should make one think of the possible existence of tubal gestation:

1. Presence of the presumptive symptoms and signs of pregnancy, i. e., morning sickness, milk and colostrum secretion, and pelvic pains referable to bladder and rectum;
2. Cessation of the menses;
3. Bluish discoloration of the vaginal wall;
4. Softening of the cervix; and
5. Changes in size, consistency and position of uterus.

The existence of ectopic pregnancy is highly probable when, in association with the above, palpation reveals an indefinitely-outlined, tender, boggy mass to one or both sides of uterus, in a patient who has or has had symptoms of acute anaemia and attacks of acute abdominal pain, especially if the abdominal tumor has increased in size with each attack of abdominal pain.

If, during an intermenstrual period with or without a suppression of the menses, a woman has an attack of severe abdominal pain followed by vomiting, collapse, slight uterine hemorrhage, think of tubal abortion. If after a few days, or a few weeks, the same clinical picture recurs, suspect the existence of a bilateral tubal pregnancy.

The severe pain of tubal rupture is accompanied or followed by symptoms of abdominal hemorrhage and acute anemia, pallor, dizziness, nausea, collapse, and weak thready pulse. In almost all cases associated with the above, vaginal hemorrhage varying in amount, slight, or profuse, and in duration from three weeks to six weeks, is said to have been present. These attacks of pain, vaginal hemorrhage and anemia may be repeated.

The treatment of ectopic gestation previous to, at time of, or after tubal rupture or abortion is operative. As stated in some of our previous publications on this subject, we disregard completely the life of the ectopic fetus and concentrate our efforts to saving the maternal health and the maternal life. The ectopic fetus, in all its various forms and at all periods of its existence, is a menace to the maternal organism. Operation removes in a few minutes what it will require unaided Nature, even in the most favorable cases, a long time to accomplish, and thereby early secures the safety of the patient.

The operation for the relief of ectopic pregnancy, for the control of its complications, and for the cure of its sequelæ, may be an emergency operation or may be one giving us time for ample preparation of the patient. In a general way it can be said that an ectopic gestation is a malignant growth and the longer it is left unmolested the greater are the dangers to the mother.

In cases of tubal rupture, and also in cases of tubal abortion associated with symptoms of abdominal hemorrhage, operative relief must be immediately instituted. A patient can bleed to death into the peritoneal cavity without a drop of blood's appearing externally. Peritoneal flooding calls for immediate intervention. Operation is equally indicated previous to tubal abortion or tubal rupture; but under these conditions if the patient be vigilantly watched, a delay of two or three days is not very significant.

In all operations for ectopic pregnancy we discard the vaginal route. We prefer the abdominal route. We are justified in making our diagnoses and basing our management of cases upon presumptive evidence. A large mortality results from delayed diagnoses.

The most immediate danger of tubal abortion or tubal rupture is hemorrhage. Laparotomy permits an immediate and complete arrest of hemorrhage. Laparotomy not only secures absolute hemostasis but enables one to eliminate the danger of post-operative or secondary hemorrhage.

It permits a more complete removal of the ovular debris and extravasated blood. It is not necessary to remove all blood from the peritoneal cavity. Let there be no needless traumatizing. Furthermore, laparotomy allows inspection of the pelvic organs and enables one to decide at once whether or not the opposite tube should be removed.

Unilateral tubal pregnancy calls for removal of the pregnant tube. The operator must not be haunted by the thought of recurrence. Recurrence in the opposite tube is exceptional.

We are not justified in sterilizing a woman just because she has had a tubal gestation.

Remove the unaffected tube:

1. If there be existing in the patient some constitutional state contra-indicating pregnancy, such as epilepsy, alcoholism, worst types of neurasthenia, syphilis, mental disease, imbecility, advanced tuberculosis, advanced cardiac, renal, or hepatic disease, or bad types of primary anemia;

2. If there be existing in the patient some pelvic deformity preventing delivery through the maternal passages of a viable fetus; or,

3. If it be imbedded in adhesions, if it be malformed or the seat of a congenital anomaly or of inflammatory, neoplastic or other degenerative changes, e. g., hydrosalpinx, pyosalpinx, etc.

In unilateral tubal pregnancy and in bilateral tubal pregnancy there should be no needless removal of tissues or organs. Therefore, if the ovaries are normal or only slightly altered, their preservation will be of great benefit to the patient. In addition to removing the pregnant tube, fetus and ovular debris, correct any co-existing pathological states if the patient's condition permits.

The mortality of bilateral tubal pregnancy, skillfully operated upon, is very low. It should be nil. In our collected cases, there were only three deaths—two from peritonitis and ileus and one from peritoneal hemorrhage.

INFLUENZAL PNEUMONIA IN PREGNANCY

By F. A. LUPTON, M.Sc., M.D.,
Obstetrician, Hillman Hospital,
Birmingham, Ala.

The frightful mortality among pregnant women with pneumonia accompanying influenza is well illustrated by the report of these five recent cases:

Case 1.—Mrs. G., age 24, white, was expected to be confined on October 9. She had one child living and well, four years old. Her condition during pregnancy was normal. There was no albumin in the urine. She became ill on September 26, complaining of pains all over the body. I visited her on that day and thought she had a slight cold. I told her I believed she was going into labor, as the cervix was obliterated and would admit one finger. A purgative and formin tablets, seven and one-half grains each, were ordered and she was instructed to stay in bed. Her temperature was 100°. She got up and went to the supper table on September 29. That night she had a chill and next day, September 30, there was a slight dullness to be made out over the left back and there was bronchial breathing. Temperature 104°. She looked ill. She was sent to the hospital. Leucocytes 9,000. That evening at 6:30 she was complaining of a few abdominal pains. She was delivered at 8 P. M., after she had had a few severe labor pains. No anesthetic was used. Her temperature at that time was slightly above 104°. The baby was well and strong and is still living. The patient gradually grew worse and died with double pneumonia complicating influenza on October 5. Oxygen was administered therapeutically at intervals for some hours before death.

Case 2.—Mrs. G., age 21, a primipara, was thought to be due for delivery on December 15. She had influenza on September 25, developed double pneumonia on September 29, went to the hospital on the 30th with a temperature of about 104°, with leucocytes 9,000, lips blue, and was bringing up blood-stained, frothy sputum. She was given oxygen to inhale, which somewhat relieved the cyanosis, which was very marked, but did not clear up the condition. She went into labor and was delivered of a dead baby on the night of October 2. She inhaled oxygen for cyanosis during labor, which was short. No anesthetic at all was given. She died October 3, some twelve hours after having been delivered.

Case 3.—Mrs. B., age 27, white, was taken sick September 27 with influenza. She developed pneumonia and went to the hospital October 8. The leucocytes on admission were 7,500. She expected to be confined about November 15, but did not go into labor and died of double pneumonia on October 11, after having inhaled oxygen therapeutically most of the time for the previous forty-eight hours. I saw this patient in consulta-

Case 4.—Mrs. C., age 21, white, had engaged me to confine her about January 23. She had never borne any children. Her condition had been normal during this pregnancy. Her husband developed influenza followed by pneumonia and she had nursed him 'till he went to the hospital, at which time she was feeling badly and had been instructed to stay in bed. I saw her on October 11, when she was found to have pneumonia. She died on October 14 without going into labor.

Case 5.—Mrs. B., aged 23, white, a primipara, was expected to reach term on November 19. She became ill on October 4 and I saw her in consultation with Dr. B. L. Wyman on October 12, when she was found to have lobar pneumonia in the lower lobe of both lungs. Temperature 101°; lips blue; she looked very sick; and on account of my recent sad experiences as well as on account of the low temperature, I felt that the prognosis was bad. I was told by the attending physician that the pneumonia had developed the day before (October 11). She had a crisis on October 17, went into labor and on October 19 was delivered of a live, healthy baby that is still living and weighed approximately 6½ pounds. Labor was easy and chloroform was used during the latter part of the second stage. The mother and baby are both doing well today, October 28.

SUMMARY

Of the five cases of pneumonia following influenza that I have seen during the last few weeks in private practice, four of the mothers have died, while one is living and well and out of all apparent danger. Two of the children are living and well. Three of the mothers went into labor and were delivered before death. One child was born dead. Two of the mothers were not delivered. An anesthetic (chloroform) was used in one (the only case which recovered), as it was felt that the shock would prove more serious than a light anesthesia.

All of the pregnant women with pneumonia following influenza whom I have heard of in the last few weeks, except the one I have just reported (Case 5), have died.

The first two patients having influenzal pneumonia who went into labor, died. Only the patient who had a pneumonia crisis two days before delivery recovered.

In all of the above cases which were seen in consultation, the family doctors wished to settle the question of whether or not to induce labor on account of the extremely critical condition of the patient

from the pneumonia. In view of the experience with this small series of cases, the writer is strongly of the opinion that labor should not be induced during an attack of pneumonia, as the shock incident to it would be sufficient to turn the tide adversely for the patient.

AUTHORS' ABSTRACTS

Surgery

The Induction of Labor at Term. Charles B. Reed, Chicago, Ill. Surgery, Gynecology and Obstetrics, Vol. 28, No. 2, August, 1918, p. 163.

In this second series of 100 cases, the Voorhees bag was used in primiparas 51 times and multiparas 49. The average duration of the labors was eight hours and eight minutes, which is slightly more than in the first series—possibly because of more primiparas. The longest labor was 28 hours (rigid cervix) and the shortest, one hour. The bag broke during or shortly after introduction three times, but it was reinserted only once. The membranes were ruptured during the introduction of the bag five times—once purposely in a case of hydramnios. There were no maternal deaths. Forceps were used sixteen times for various obstetrical indications. There were no premature babes. The average time for the expulsion of the bag was three hours and nine minutes. The longest detention of the bag in the cervix was nine hours. The shortest, ten minutes. In all but two cases a weight was attached to the bag after introduction, just enough to keep up a mild irritation of the cervix. In no case was dilatation necessary previous to bag introduction and in only five cases an anesthetic. These were neurotic women. Involution was normal in all cases. There were no infections. The author claims that labor is shortened six or seven hours and much vitality conserved. The technique is easy to acquire. There are apparently no serious objections to the method when carefully worked out and both patient and doctor are accommodated by the knowledge that labor may and does occur on a certain day and date with all the care, cleanliness and scientific precautions of a surgical procedure.

Some Observations on the Blood Supply of the Uterus, with Special Reference to the Operation of Vaginal Hysterectomy. Howard Crutcher, Tularosa, New Mexico. New York Medical Record, Vol. 94, No. 3, July 20, 1918, p. 103.

The main purpose of the author of this paper is to press home the fact that the great evolutionary forces of Nature operate within as well

as without the limits of the human body. The uterine artery in the virgin subject and in the uterus after parturition pursue different courses so far as curvature is concerned. In no case does the uterine artery pass into the muscular wall of the womb, except possibly through violent pathologic changes. The facts set forth concerning the uselessness, not to say the folly and danger, of ligating the main trunk of this vessel in uncomplicated vaginal hysterectomy may startle all those who lack actual operative experience in this line of work, but the teaching is already perfectly familiar to those who have pursued the clear revelations of the tissues themselves. It will be noted that the fundus of the womb is brought forward through the anterior or superior fornix, which is a far easier procedure than attempting to draw it into view from below. The writer believes that much mischief and many deaths have resulted from the utterly useless attacks upon the main trunk of the artery, when artery, ureters, base of bladder, rectum, and all, may be easily and safely pressed out of the way of all harm in all uncomplicated cases of the operation.

The Cause and Prevention of Post-Operative Gas Pains. Walter C. Alvarez, San Francisco. California State Journal of Medicine, Vol. 16, No. 7, July, 1918, page 338.

Considerable amounts of gas formed normally in the intestine are rapidly excreted by the lungs if the mesenteric circulation is normal. Under certain conditions gases may even pass back into the bowel from the blood. Physicians have desired a clean bowel—they should strive for a normal circulation and a normal gas exchange. Purging upsets this mechanism and causes severe flatulence in many people. Experiments show that purgatives weaken and poison the intestinal muscle. They do it unevenly, leaving paralyzed regions in which gas accumulates and whence it can not be driven. Why do we starve and purge our patients? Not to empty the bowel, because we do not restrict the practice to gastrointestinal operations. The small bowel will empty overnight by itself and the colon can easily be cleansed by enemas. This practice can be traced back to Greek medicine with its humoral pathology. The ancients purged as we do, but to get rid of "black bile."

Pre-operative purgation is becoming milder, but it should be stopped altogether. Some cases may need enemas. Food should be given as late as possible before and as early as possible after operations, for its tonic effect on the gut and its tendency to restore peristalsis. Handle tissues gently and avoid peritoneal drying. Give water ad libitum by the mouth after most operations. Avoid the Murphy drip, as it often keeps up distress. Avoid post-operative purgation and all heroic treatment. The results obtained by many surgeons without "preparation" have been excellent.

EYE, EAR, NOSE AND THROAT

DISEASES OF THE NASAL ACCESSORY SINUSES WITH LANTERN SLIDES*

BY JOHN W. MURPHY, A.M., M.D.,
Cincinnati, Ohio

The writer wishes to put on record an interesting case of a diseased ethmoid cell that recently came under his observation.

CASE REPORT

Mrs. S., aged 50 years, was operated upon in November, 1916, for a deviated septum and polypoid degenerated middle turbinate on the right side. The ethmoids were diseased on the right and the cells were opened and drained. There was no apparent disease of the left ethmoids at this time.

In July, 1917, she returned complaining of much stoppage of the left side of the nose. The ethmoid cells on the left side were diseased and a number of large polypi were removed. In breaking down the anterior ethmoid cell, with the right angular punch forceps, a hard substance was encountered that caused me to let go of the cell wall, since my forceps had grasped something much denser than the bone in this region. I was not able to see what the substance was, but felt that it was a foreign body of some kind. I engaged it a second time, and by a twisting motion of the forceps succeeded in removing a supernumerary tooth. This was the first time I had encountered a foreign body of this character in one of the anterior ethmoid cells. I have found a tooth in the nasal passages several times, but never so high up as the ethmoid before.

The coronal sections of a head were made with the object of more clearly demonstrating the relation and normal openings of the various accessory cavities of the nose. The sections were made after careful measurements on the external portion of the head and at a point where I estimated one of the normal openings of an accessory cavity would most likely be encountered. The sections were made somewhat oblique so as to give two chances of striking the normal opening. I was fortunate in this respect, since the mouth of the lachrymal canal and the ostium maxillæ were both included in the sections. The last section was made to show the middle ear and its adjoining

structures. On the right side the attic and mastoid cells are well known, while on the left the membrana tympani, the mastoid antrum and chain of ossicles, in position, are well shown.

One of the chief difficulties encountered in making sections of the entire head has been to preserve properly and harden all of the tissues so they would not be injured nor displaced during the section. When the hardening process was carried on too rapidly the outer portions would become hard before the deeper structures, and displacement or tearing would occur at the time of section. This was especially the case with the brain, as its various coverings prevented the preservative's penetrating to the deeper portions. Then, too, the shell-like bones of the ethmoid and sphenoid cells were apt to be broken and displaced by any instrument sufficiently strong to penetrate the thick, bony covering of the skull.

In formaldehyde we have an invaluable agent for our hardening process and an inexpensive substance in which to keep the specimens for an indefinite length of time without shrinkage or discoloration.

After the usual injection of the common carotid artery, the head was severed and placed at once in a three per cent. solution of formaldehyde. This solution was changed about once in three months. The specimen was kept in this solution for three years, and by this slow method a gradual and uniform hardening of all the structures, including the brain substance, was secured.

A wooden box was constructed to support the head accurately in an upright position. Lines were drawn upon the box at points where I estimated the openings of the accessory cavities would most likely be encountered.

After thoroughly washing in running water, the head was submerged, crown down, so all of the cavities would be filled with water during the freezing process. The head was then surrounded with three hundred pounds of pounded ice and salt for seventy-two hours, by which time all of the tissues were thoroughly frozen.

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

The skin was then anointed with vaseline to prevent the plaster from sticking, and the head placed in the box, with the face in a slightly oblique position. The box was then filled with a mixture of plaster of Paris, which held the head firmly in position during the section. A very fine saw, about half an inch wide and thirty inches long, after the manner of a cabinet-maker's scroll saw, was now made to trace the previously sawed lines on my embedding box. The box was then knocked away, the plaster fell off, and my sections were as you see them today. Not a bone was torn nor displaced during the section. As you can see, the brain is as firm as wax and retains all of its structural relations.

I think if we can carry a mental picture of the actual relation of these parts, it is of much value to us in the various operations which we have to do upon the accessory sinuses; and it is, with a view of giving a mental picture of the parts as they actually exist, that I had lantern slides made of these sections. They will give you an accurate relation of the various sinuses to one another. As there are five sinuses opening into each nasal cavity, we thus have ten important sinuses opening into the two nasal cavities, five on each side,—the lachrymal duct, the frontal sinus, the maxillary sinus, the ethmoid cells, and the sphenoid cells.

Discussion follows next paper.

THE SYSTEMIC AND LOCAL TREATMENT OF ACUTE INFECTION OF THE ACCESSORY NASAL CAVITIES AND THE RELATION OF PATHOLOGICAL CONDITIONS IN OTO-RHINOLOGY TO GENERAL MEDICINE AND SURGERY*

By J. A. STUCKY, M.D.,
Lexington, Ky.

The object of this paper is to call attention, especially of the younger members of this Section, to the needless and often dangerous use of surgical interference in

the treatment of acute infection of the nasal accessory cavities, and also to the fact that we must either be better "all round" doctors or have the aid of the internist and radiographer. The pendulum has swung toward radical surgical treatment. The average case of acute infection of these cavities will yield to medical treatment aided by the mildest and least irritating local treatment.

For some years past I have contended in medical journals and in private discussions that the relationship and dependence of the oto-rhinologist (and vice versa) to the internist, neurologist and general surgeon is not so close and intimate as it should be. Time, experience and closer observation have more deeply confirmed this view. The findings of eminent internists, surgeons, neurologists and pathologists in the last year or two have given new weight and strength to my own conclusions. Never was it truer than today that no special branch of medicine can be practiced independently. Every so-called isolated and special organ of the body is dependent more or less upon the whole body, with all its organs and apparatus. Although the oto-rhinologist is considered one of the most exclusive of specialists in medicine and surgery, we have never appreciated this fact as we should, nor have specialists in diseases of other organs appreciated the oto-rhinologist as they should. Few of us recognize as we should the value of, and our dependence upon, the bacteriologist, physio-chemist and dietitian, as well as upon the internist, neurologist and the general surgeon.

To be known as a specialist in the practice of the science and art of medicine should carry with it far more respect and responsibility than it generally does, for it means that besides being a graduate and trained practitioner in the healing art, we are now devoting more time, energy and study to functional and organic diseases of certain special organs of the body, and as a result of this limitation of the field and concentration of our efforts in study and observation, we are expected to have more skill and dexterity and greater accuracy and success than does the one who does not thus limit and concentrate his efforts. Too much, of late, has been said and published on "needless

*Abstract of paper read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

“mutilation,” “massacre” and “slaughter” of tissue and organs not only in the field of the oto-rhinologist, but also in that of the abdominal surgeon. Especially has criticism and condemnation been cast upon those surgeons who have vigorously advocated the complete and radical removal of organs whose function is unknown or is supposed to have an internal secretion.

Such language, to say the least, is to be deprecated, and the wise medical man is careful not to use it, especially where there is a possibility or likelihood of the laity hearing of it. Any medical man who is ultra radical in all his work is as unwise as he is dangerous, so also is the ultra conservative practitioner. The safe and increasingly successful one is he who is conservatively radical. There is a marked difference between conservative radicalism and radical conservatism.

In the growth and development of our profession there may have been short periods of surgical and medical intemperance in the treatment of conditions and diseases requiring use of one or the other methods, but never have we been justified in resorting to language which conveys such impressions as “massacre,” “slaughter,” and “mutilation.” The apology I offer for this digression from the topic of my paper is that I may the more forcibly emphasize the intimate relation and interdependence one upon the other of all the departments of the science and art of medicine and surgery.

Of late much has been written by such able internists as Billings and Rosenow and such surgeons as Mayo, Murphy, and others, with reference to oral infectious foci, and there are now many morbid specimens in pathologic exhibits that show heart lesions and diseases of other organs, which collectively and individually tend to prove beyond a doubt that focal affections in the region of the cavities of the ear, nose, throat, mouth, teeth and tonsils may be the primary causes of serious pathological conditions not only in the joints but in the abdominal viscera and organs of the thoracic cavity.

The importance of focal infections as a point of entrance of bacteria in general is well recognized, but the idea that the focus serves in addition as a place where

bacteria can acquire new properties is not generally recognized and needs to be emphasized.

Under artificial tooth crowns and bridges, above and below the roots of dead teeth, there often exist bone cysts or other sources of pus formation. Any condition of the nasal activities, nasopharynx, pharynx or the alveolar process (pyorrhea pockets) resulting in purulent or muco-purulent micro-organisms, which may find their way into the gastro-intestinal tract through deglutition or into the blood by absorption through lymph channels almost invariably results in indicanurea. I have had a case of Ludwig's angina in an adult which recovered and one of edema of the glottis in an infant, which was fatal, which directly or indirectly could be accountable for the existing auto-toxemia, septicemia and pyemia. With the aids of the Roentgen ray, electric transillumination lamp and other methods of determining actual conditions, assisted by the physico-chemist and bacteriologist, we shall be able to report back to the internist, neurologist or surgeon who refers the case to us complete and satisfactorily whether the cause of existing symptoms could positively or probably exist in that portion of the body to the diseases of which we give special attention.

It is well known that retained secretions in nasal accessory sinuses, or any partially closed cavities, tend to become purulent and cause systemic infection by being absorbed. Rosenow has proven that retention of bacteria may acquire new and deadly properties, as in sphenoidal, frontal and maxillary sinuses. Brem, in examining three hundred bodies in the Colon Hospital which died of various diseases of non-pneumococcic origin, found that in 14 % pneumococci were present, and in 70 % of the cases dead from pneumonia. This sheds new light and gives increased evidence of the sinister possibilities of nasal accessory sinus disease as a factor in infections of serious nature.

One important fact, often overlooked by careful and capable scientists, is that the treatment of pathological conditions in oto-rhinology differs from that of any other portion of the body in that these cavities with their accessories require constant ventilation as well as constant drain-

age, or the existing pathological conditions can not be permanently eradicated.

A suppurative area in the field of otorhinology demands the same careful and thorough surgical treatment as it does anywhere else in the body, and as large an exit by incision, a thorough curettage if necessary, and perfect drainage maintained until all suppuration ceases and healing takes place. This can be done, but is more difficult because while we are maintaining drainage we must not for any length of time interfere with ventilation. The medical profession as a whole is rapidly learning that the mastoid process and cells are to the cranial cavity what the appendix is to the abdominal cavity, and by early treatment of acute infection of the middle ear, by a free myringotomy, mastoid infection, suppuration and otitic meningitis are greatly lessened. The recognition of this by the internist and pediatricist, and the prompt relief given to the sufferer with earache, is rapidly reducing the number of cases requiring the mastoid operation.

The relation of pathological conditions in otology to general medicine is emphasized by the number of cases seen by internists complaining of nothing but a general malaise, running a temperature curve not unlike that of typhoid fever, but having none of the pathognomonic symptoms or indications of the disease. There are none of the classical symptoms of mastoid suppuration; there is little if any change in the drum membrane; no pain nor swelling back of the ear. The case runs a course of ten days or more, when suddenly the temperature shows a decided septic curve, the blood count shows not only an increase in leucocytes but in polymorphonuclear percentage, and later on classical symptoms of mastoid suppuration, meningeal irritation or sinus thrombosis appear. The otologist is called, the location of the septic focus determined and the operation reveals a thick cortex over the mastoid, and beneath which is an amazing destruction of bone, extending through the inner table of the skull. The sigmoid sinus uncovered and exposed, a large extra-dural abscess is revealed; and all of this without any symptoms of ear disease. In the beginning deep pressure and percussion over the mastoid

process, with transillumination or rodiogram with daily differential blood counts, would have given evidence of the disease and early surgical treatment have brought speedy relief. This picture is one often seen by the otologist, and is not to be classed with the rare and atypical cases.

The internist or general practitioner who allows an appendix infection to pursue its course until rupture occurs, and the abdominal cavity becomes filled with septic material, is greatly chagrined over his failure to detect what was taking place in the abdomen, and humiliated by the delay and danger to his patient in not urging surgical treatment earlier.

When the average general practitioner can as quickly and accurately diagnose acute middle ear and mastoid infection as he can those of the abdomen and urges surgical help as quickly in one as in the other, we shall have fewer cases of permanently impaired hearing and meningeal and lateral sinus infection.

Cases of chronic catarrhal otitis media, tinnitus, ankylosis of the ossicular chain and oto-sclerosis, cases that come first to the family physician, can only be successfully dealt with by the combined efforts of the internist and otologist, assisted by the physiological chemist and dietitian. In this case of cases after the local obstruction and destructive causes are removed, faulty metabolism, as result of improper food, insufficient elimination and auto-intoxication, whether from intestinal stasis or what not, must be removed. A few days on a restricted diet, an occasional analysis of the feces and urine, is of little service to the patient and less help to the physician.

In certain surgical cases, in order to obtain reliable aid from blood examinations daily or twice daily differential blood counts must be accurately made, so in these cases in oto-rhinology which are due to or maintained by faulty metabolism, frequent laboratory examinations of both urine and feces must be made before we can prescribe a diet or drugs that will aid in arresting or curing the disease.

It is just here that oto-rhinologists, internists and neurologists often commit a grievous error by not going fully into the details of each case and assiduously following it up. It is not enough to push the

case aside with the statement that the cause of the trouble is faulty metabolism (whatever that may be) and do nothing but give placebos, and promise nothing but to do the best you can, and urge the patient to be patient and optimistic. I insist that it is a reproach to our science and art to admit that we do not know and cannot find the cause of any pathological condition that the human body has acquired, and I believe we shall find and remove it when all of the special departments of medicine and surgery act in harmony and with determination. Faulty metabolism with the persistent co-operation of the patient can be made faultless.

We must remember that normal metabolism requires proper functioning of every organ, and it is just as essential that the elimination of waste matter be properly accomplished as it is for the anabolic process to take place. Perfect function requires that every bodily organ be in a sound condition, otherwise imperfect combustion and retention of nitrogenized material is dangerous to that particular part of the body on which it exerts its influence. The blood, being the primary factor in the distribution of nutrient and oxygen to the tissues, is also the carrying agent of toxic material, and any new eliminated waste product will thus find its way to some particular organ of the body which will then manifest marked symptoms.

Cases are often referred to oto-rhinologists by internists, neurologists and surgeons, and we are expected to restore lost organs and tissues and to rejuvenate those which have not undergone complete degenerative metamorphosis,—all, acting together, aided by the physio-chemist and dietitian may yet do more than arrest the progress or ameliorate the condition caused by a long, suppurating ulceration, from calcification of the drum membrane and ankylosis of the ossicles in inflammatory conditions involving the naso-pharynx and extending into the Eustachian tube, causing impairment of its drainage and ventilation. Chronic pharyngitis of lithemic or gouty origin has brought about insidious changes along the Eustachian tubes, causing irregularities and impediments to flow of air and the blood and lymph circulation.

For these conditions much can be done, but the oto-rhinologist must either do the work of several departments of our science and art or have the hearty and interested co-operation of them all. Inflammation first causes congestion and increase of the connective tissue elements; then follows contraction, anemia, faulty nutrition, atrophy and degeneration.

Speedily remove the cause of the inflammation and there will be no sequelæ. This can be done by the united help of the general and special medical man, aided by an educated and co-operative laity. The time limit of this paper forbids my discussing in detail any of the graver pathological conditions in oto-rhinology and their relation to general medicine and surgery.

In conclusion, let me add that I have seen cases of knee-joint suppuration and other metastatic conditions resulting from an unrecognized suppuration in the ear and nasal accessory sinuses. Also there have been cases of pronounced mental depression and melancholia from involvement of the frontal lobe (the silent area) of the brain, due to infection passing through the cribriform plate and resulting in a pachymeningitis. In this age, and this degree of perfection of the science and art of medicine, the relation of one branch to the other, of one specialty to the whole, is one and inseparable. In every department we have received much and advanced far. To every one let us give as we have received and help the other to advance as far or farther than we have.

DISCUSSION

Papers of Drs. Murphy and Stucky

Dr. Richmond McKinney, Memphis, Tenn.—The question of the treatment of nasal accessory sinus trouble is the primary one that we are discussing, and perhaps the most important one. This question of treatment is one that is unstable, we may say, because we have a multiplicity of operations for it. When we have a multiplicity of operations for any given condition, we know that there has nothing satisfactory been evolved in the way of treatment. For the frontal sinus, the Killian is, perhaps, the most satisfactory, but the large mortality that he has had has deterred some from using it. I think, and others who have done much sinus work think, that it is the most satisfactory operation to use. It requires careful and good technique, and this has kept many who do not do much sinus work

from adopting it. Dr. Stucky says that we perhaps operate too quickly in some of these cases. With this I agree. If you do a middle turbinectomy and treat the case expectantly, you may succeed in aborting many of these cases. I do not believe in being too radical in sinus surgery. We see a lot of deformity as the result of operating a little too extensively. The Killian operation, properly performed, gives comparatively little deformity. As to intranasal sinus operative work, I have not done any.

For empyema of the antrum, the old Caldwell-Luc operation has been employed by me in most of my cases, and I have used it with favorable results. The Denker is especially good in some cases. You have to study the case and work it out. Prior to performing any sinus operation, one should have good x-ray plates made. They are valuable guides, and there is no reason for doing an operation that is not an emergency without having made an x-ray study of the case. We should have the best evidence that we can to show what we have to deal with. A case in point is this: A woman was seen by me in my service at the Baptist Memorial Hospital with a very bad empyema of the antrum. I did the external operation, curetted the antrum thoroughly, and made a large opening for drainage through the nasal wall, taking away a large portion of the inferior turbinate. She recovered quickly, and went home. A few months ago she came back, saying that she was again having trouble with this antrum. There were no facilities for charity work in the way of x-ray pictures at the time of the previous operation, and I had done this operation without a preliminary radiograph. This time I had a picture made and found a gold tube that a dentist had used for drainage through the alveolar process at the bottom of the antrum. It had been there probably before the other operation. I removed it and, as far as the antrum is concerned, she recovered. In any work of this kind, I desire to emphasize, we should first have good pictures.

In this part of the country we do not have so much chronic accessory sinus trouble as they do in the North, probably because the climate is milder. We do have a good many acute cases. They sometimes persist for quite a while, but removal of the anterior part of the middle turbinate, permitting the frontal sinus to drain normally, brings them to an end and very few demand radical operation.

Dr. Arthur I. Weil, New Orleans, La.—There is probably more individuality to the inside than there is to the outside of the nose and the features of the face. The more we see of these sections, the better able we shall be to contend with various abnormalities.

Regarding what Dr. Stucky said about conservatism in the treatment of sinus infections, I take it that his remarks were limited to the acute cases; and I think, with him, that it can not be emphasized too strongly that acute sinus infections will get well if you let them alone. The less you do, the better the patient is going to be in many cases. I also think, with him, that local treatment should be avoided in most cases.

I have found that a weak solution of cocaine and antipyrin used in the nose, not as a spray, but on pledgets of cotton, is very beneficial in such cases. These pledgets with this antipyrin-cocaine mixture on them are put in the nose and allowed to remain there for ten minutes. This mixture has an advantage over adrenalin, which should be used sparingly; because it causes a great deal of reaction. If we shrink the tissues with strong 1:1000 solution of adrenalin, we get, later, a reaction and swelling of the tissues, which blocks the exits and counteracts the good effects. It causes sneezing and reaction in that way. The A-C mixture causes shrinking lasting two to four hours and we get drainage without this reaction.

Needless to say this cocaine solution is only used in the office by the doctor and is never put into the hands of the patient for home use.

I must differ with what Dr. Stucky says of his reluctance to open the antrum in acute antrum cases; I mean simply the Douglas puncture into the antrum, the so-called trial puncture. The antrum is the one exception in my practice to the rule of letting acute sinusitis alone. Not only does the Douglas puncture confirm the diagnosis, but it materially hastens the cure. I have frequently seen acute antrums get well with two or three irrigations that I feel sure would have gone on for several weeks at least under the expectant treatment and then possibly might not have recovered spontaneously. The reason for this is not far to seek. If we shrink the nasal tissues to bring about drainage of the cavities, the frontal sinus, sphenoid and ethmoid will drain from gravity alone, whereas the antrum with its opening, as we know, high up in the top of the cavity, will not drain by gravity alone, but must be helped by these washings. We must remember that a Douglas puncture is a very minor procedure and practically without danger.

In regard to the treatment of chronic antrum, the Caldwell-Luc operation through the canine fossa with curettage of the cavity was formerly the accepted procedure. But in my experience many of these chronic cases can be cured by making a large intranasal opening into the inferior meatus without disturbing the turbinate or the canine fossa. The condition then frequently heals without curettage and, if necessary, the patients can be taught to irrigate the cavities themselves through these large openings. I have seen antrum suppurations of five or ten years' duration cured by this method.

Dr. H. H. Briggs, Asheville, N. C.—I am sure that we are all grateful to Dr. Murphy for presenting these beautiful pictures, showing both vertical and horizontal sections of the face. I hope to be able to study them more minutely in the JOURNAL. While we can learn a great deal from the study of these sections, I am sure that Dr. Murphy has learned infinitely more from his work than we can learn by simply observing what he has done. My advice is that when we have an opportunity we should go back to our dissection and, if possible, make such sections as Dr. Murphy has shown.

I am very glad that Dr. Stucky has stressed the systemic treatment of acute sinus disease. We are surgeons essentially, and, therefore, optimistic in surgical matters. We see the beautiful results from surgical interference in diseases of the sinuses and this makes us enthusiastic in surgical treatment. We can learn a great deal, however, from the general practitioner. Frequently he treats these cases of acute sinusitis as well as we might, and he does it by internal and systemic medication. Not only is purgation essential, but the diet of the patient should be attended to. In the first place, the patient is sick. He has not only an acute local infection, but also a systemic infection. He has temperature and other general symptoms. He should be put to bed and given purgatives, diuretics and diaphoretics. I think that cold locally not only adds to the comfort of the patient, but allays the acute inflammation. Of drugs, we sometimes forget our old friend aconite. One of my conferees, a general practitioner, has called my attention to the splendid results from its use.

The speakers are entirely right in their advice not to operate early in these cases. However, there are exceptions. Only a few days ago I saw a case of pansinusitis of the left side. There was proptosis of the left eye and a temperature of 103°. It was evident that something must be done quickly. I opened the antrum through the inferior meatus, after removing the anterior portion of the inferior turbinate, and after a middle turbinectomy I opened the frontal sinus. The temperature subsided in a few days, and the patient went home much relieved. This case must be followed up. This is the sort of case that has chronic suppurative later on, and we should not be led to believe that it is well when its acute symptoms have subsided, because many go on to chronic suppurative.

Dr. E. L. Roberts, Nashville, Tenn.—I first want to emphasize what has been said with regard to mild treatment during the first part of the case. One should be a little slow about doing surgery, because we often find that surgery does not become necessary at all, if we are a little slow in resorting to it. As to the chronic cases, I endorse what has been said in reference to antrum cases, about making a permanent opening in the nasoantral wall near the floor, to give permanent drainage, and to make an opening through which the patient may wash out the cavity from time to time as may be necessary.

Dr. J. B. Greene, Asheville, N. C.—While I agree with Dr. Stucky that we should be slow in undertaking surgery in acute sinus trouble, yet I am inclined to the view that with acute sinusitis particularly involving the antrum, it does not pay to temporize too long. We must give drainage to the antrum in order to cure our patient promptly.

It is not difficult to puncture the antrum below the inferior turbinate and wash the pus from the cavity. In a good percentage of cases the antrum can be irrigated through its natural opening after the use of cocaine. In this way the procedure is almost free from pain, and no trauma results. In reference to the use of local

and constitutional treatment of acute sinusitis, I am inclined to place local treatment first, giving constitutional treatment a secondary place.

Dr. R. H. T. Mann, Texarkana, Tex.—I want to ask a question. I enjoyed the paper of Dr. Stucky very much, and I should like to ask what experience he has had with the use of the Carrel-Dakin solution in the treatment of diseases of the accessory sinuses. I have used it in some throat infections, and I am wondering what is to be expected in treating nasal cases with that solution.

Dr. G. E. Atkins, Jackson, Miss.—I also have found it a very difficult matter to get into the maxillary sinus opening through the nose. I was glad to hear Dr. Murphy say that it was a difficult matter for him because I had always charged it to some deficiency on my own part. I was also glad to hear Dr. McKenny say that he hesitated to do the blind operation on the nasal accessory sinus. I have always been afraid of it and did not know whether I was a coward or not.

As to Dr. Stucky's paper, it has been my experience that we always do more damage with the electric cautery than we do good. I have two patients in which I believe the use of the electric cautery has produced epilepsy. I would like to ask, however, what his objections are to making a puncture in the maxillary sinus as a diagnostic method. If we have a gaseous pressure within or a negative pressure I do not see why it would not clear up the diagnosis and relieve the condition. The Douglas puncture will frequently relieve the sinus condition and at the same time clear up the diagnosis.

I have had the same experience as Dr. Roberts has had with a few of his dentist friends. I recall a case in which a tooth had been extracted and a gold tube inserted into the antrum through which daily washing had been done until the patient was unable to visit the dental office. Finally, one eye turned across the nose and a cancer of the brain was found to be producing the pain for which the antrum was being washed.

Dr. J. A. Stucky, Lexington, Ky.—You must not forget that the first thing to do in these cases of infection of the nasal accessory sinuses is to give function. Our treatment differs from all other surgery in that we must both ventilate and drain. Now, I do not know why Nature put that opening into the antrum high up, but she put it there. If the radiograph or transillumination demonstrate the presence of fluid in the cavity by pushing the middle turbinate to one side, it is comparatively easy to empty and clean the antrum through the natural opening. But if we ventilate thoroughly the middle meatus I do not think that we need puncture the antrum. We can learn the cause of the trouble in another way. If we do puncture through the inferior meatus, let us leave the inferior turbinate alone. That is real bone, a part of the superior maxilla; and if we take off a part of the inferior turbinate, we are going to have a bed for dry crusts to form as long as the patient lives. I mention that procedure only to condemn it, as also do I

mention the use of cocaine or a strong solution of adrenalin. If cocaine is used, it should be used by the rhinologist alone, and not by the patient. That is a favorite prescription of mine, the combination of antipyrin with 1:10,000 solution of adrenalin. Aconite is a good drug if you can use it in the hospital. I am afraid to let the patient go home with it. Some preparation of iodine or the muriate of ammonia, or the old-fashioned Dover's powder, after thoroughly arousing the secretions and getting the skin to act, will answer every purpose.

The paper deals with acute infections, and not chronic; and the antrum of Highmore (or the maxillary antrum) is a reservoir for the anterior ethmoid, which pours down through the meatus semilunaris. If the antrum is infected and the infection is not from a tooth, which is rare, it comes from the ethmoid. The Killian operation is usually the result of chronic conditions.

Dr. J. W. Murphy, Cincinnati, Ohio—I just want to say a word or two in reference to the Killian operation. I believe that we have largely drifted away from that. Some years ago, when Dr. Ballenger and I visited Killian's Clinic, he was a believer in the internal sinus operation rather than the external. I said to Killian: "I want to see some of your external operations." He laughed and replied that he did not do them any longer except in rare instances. He had not done an external operation for months. Therefore, he had none to present. In many cases we can get sufficient drainage from the internal operation and I prefer it to the external; as there is liable to be more or less disfigurement from the latter.

Regarding the difficulty in probing the frontal sinus I would say that the Doctor misunderstood me. I meant the antrum semilunaris and not the frontal sinus. I found an instrument of this kind to be a great aid in examining in these conditions. By passing this long speculum up between the turbinate and the ethmoid, breaking off a portion of the middle turbinate and pushing it to one side, it is wonderful the view that you may get of the condition of the ethmoid, lying just to the side of the middle turbinate. When it is necessary to operate on the ethmoid I like to leave the middle turbinate as a landmark, even if I am going to remove it later. Then I am not in danger of injuring the cribiform plate if I keep outside the middle turbinate.

Dr. Frank Dyer Sanger, Baltimore, Md.—I want to ask Dr. Murphy whether he thinks well of the enforced drinking of water in these cases of acute suppuration of the antrum, acute cold and acute tonsillitis. It seems to me that no single therapeutic measure is of so much importance.

Dr. J. W. Murphy, Cincinnati, Ohio—I think that is most important. If I have the patients in the hospital or at home, I do that. Sometimes, in order to make it specific and have a good psychological effect, I say that the patient must have four ounces of water, perhaps with orange juice in it, every hour. Get the tissues full of water and be sure to get rid of any toxins that may be in the gastrointestinal tract.

TONSILLAR INFECTIONS AS A SOURCE OF SYSTEMIC DISEASE*

BY JAMES JOSEPH KING, A.B., M.D.,
Attending Laryngologist, Hospital for the
Ruptured and Crippled; Assistant
Surgeon in Otology, New York
Eye and Ear Infirmary; Chief-
of-Clinics, Ear, Nose and
Throat, Gouveneur
Hospital,
New York City

Many contributions to the literature within the last few years, as well as much research work, have proven definitely that infections of the tonsils are frequently the cause of such systemic conditions as infectious arthritis, acute rheumatic fever, nephritis, endocarditis, myocarditis, anemia, cervical adenitis, goitre, chronic coughs and colds and a large group of nervous disorders commonly classified as neurasthenia.

The organisms found in the tonsils in such conditions are the usual pathogenic varieties, such as the streptococcus viridans, streptococcus hemolyticus, staphylococcus albus, pneumococcus, tubercle bacillus, several varieties of Gram-negative diplococci, the bacillus pyocyaneus and the colon bacillus. In the author's experience the streptococcus viridans, streptococcus hemolyticus and a Gram-negative diplococcus have been most frequently encountered in the systemic conditions.

Occasionally secondary infections, as syphilis, sarcoma, etc., occur in the tonsils. The streptococcus viridans shows especial affinity for the heart valves, and the streptococcus hemolyticus for the joints.

Focal infection is the most important subject before the medical profession today. A focus of infection may be located anywhere in the body; but certain structures are more frequently affected than others. An ideal site for a focus of infection is in a structure which has a recess or pocket which does not drain freely. Most infections are harmless as long as free drainage is maintained. When, how-

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ever, the drainage from an infection is cut off, toxins are produced and absorption takes place. Experience has taught, therefore, that the tonsils, teeth, nasal accessory sinuses, mastoid cells, pulmonary alveoli and bronchi, gall-bladder and ducts, appendix, uterus and Fallopian tubes, prostate and seminal vesicles, pelvis of the kidney and ureter frequently harbor a focus of infection. The tonsils, on account of their location in the oral cavity and their histological structure, are the most frequent site of these infections. Absorption of toxins from intestinal stasis is capable of producing the same conditions.

The location of the tonsil makes it especially susceptible to infection. The faucial tonsils are situated on either side of the oropharynx, and are bounded in front and behind by the faucial pillars, and externally by a capsule. Their inner surface is covered with stratified epithelium. Each tonsil contains from eight to sixteen crypts or lacunæ, branching out and extending nearly to the capsule. These lacunæ or crypts contain broken-down cells and debris, and often lodge particles of food.

If the openings of these lacunæ or crypts become closed, the matter is retained and becomes fetid and laden with bacteria. The surrounding tonsillar tissues become inflamed. The glands at the angle of the jaw then become enlarged and furnish evidence of the absorption of septic material from the chronically inflamed tonsil. The fetid masses are more frequently found in the buried tonsils, the character of which is likely to escape notice. In such tonsils, it is worthy of note that the margin of the faucial pillars is more congested than the rest of the mucosa. When this congestion is evident the tonsils should be carefully examined. In tonsillar infections the other lymphoid tissue in this region, i. e., the adenoid and the lymphoid tissue at the base of the tongue, are frequently infected. They should not be overlooked in searching for a focus of infection.

Coakley in a recent paper quotes the following experimental work done by Dr. S. Flexner at the Rockefeller Institute. The tonsils were removed from patients under aseptic precautions and placed in

sterile containers without being handled and delivered to the Rockefeller Institute. This was done in connection with animal inoculations from tonsils of patients suffering from poliomyelitis.

"Cultures of streptococci were injected into rabbits intravenously, the cultures in the first one to three generations on artificial culture media being employed. Altogether the number of rabbits injected from cultures made from tonsils was 154, of which 101 succumbed to the inoculation. Of these animals, 8 developed paralysis of one or more limbs; 29 developed meningitis; and about two-thirds of the rest developed arthritis. About one-half of the cultures came from the tonsils of poliomyelitis patients, and the other half from patients who were non-sufferers from poliomyelitis. The distribution of the lesions in the two series was almost identical. The most frequent effects were infections of the joints. Endocarditis, pericarditis, abscess in the muscles, and abscess in the kidneys developed in a few animals as a result of the inoculations."

Such work is exceedingly valuable corroboration of the clinical evidence that such lesions frequently follow acute infections of the tonsils.

Dr. G. B. Wood, in an experimental study, has proven that the streptococcus and other varieties of organisms can enter the blood through the medium of the tonsils and produce infection in the joints, the heart or the kidneys. He has also found that the tonsil in the hog is more readily infected by the anthrax bacillus than any other portion of the buccal mucous membrane.

In 1910, H. W. Loeb cited four cases before the American Laryngological Association and said:

"Acute nephritis results from acute tonsillitis far oftener than is generally supposed."

In chronic arthritis, the focus of infection has usually been found in the head and most frequently has been found to be a chronic infection of the tonsil.

Davis obtained pure cultures of streptococcus viridans in the crypts of 40 % of tonsils removed from patients with endocarditis which was supposedly of tonsillar origin.

Osler says that tonsils are probably the port of entry for the micro-organisms of the not-infrequent cases of endocarditis without recognizable cause.

"In acute endocarditis of tonsillar origin, if the patient can survive the anesthetic it is better to enucleate the tonsils than to permit their continued transference of toxins."

Harbitz, in 1905, made a careful study of the glandular systems in a large number of clinically tuberculous persons and others, with the object of determining the portal of entry in those with tuberculous lesions of lungs, glands, bones and meninges. In many instances he demonstrated by animal inoculation and by cultural methods tubercle bacilli in the tonsils, adenoids and cervical glands that grossly and microscopically showed no tuberculous lesions. It is, therefore, probable that the tubercle bacillus may not only pass through the normal mucous membrane without causing lesions, but may remain latent in histologically normal lymph glands for months or years.

Dowd finds in tuberculosis of the glands of the neck the oldest lesion in the so-called tonsillar gland at the angle of the jaw in 86 % of his cases. Many of his patients give a history of frequent attacks of tonsillitis or pharyngitis.

In searching for a focus of infection in systemic conditions, a careful history of the patient's illness is important. We believe that the absorption of chemical toxins from these organisms in the tonsils is capable of producing serious lesions in the nervous system, in the heart, kidneys, joints, muscles, glands, blood and respiratory tract. These symptoms or sequelæ may be so serious that life itself is endangered. All of these complications have been observed in our clinical experience. Improvement and cure have followed the removal of these infections in numerous patients who had previously resorted to every known means of treatment, whether it was endocarditis, myocarditis, nephritis or arthritis.

By this it is not meant that every patient with these affections in which these organisms have been found in the tonsils has been cured, but that we have a record of at least one such case in each type in which the eradication of the focal infection in the tonsil has stopped all symptoms.

The typical clinical history of such cases is as follows:

The patient had a tonsillitis of greater or less severity, and sometimes even no discomfort was felt in the tonsils, but only an infection in the nose and throat was noticed. Within a few days or a few

weeks some other symptoms developed. The tonsillitis or infection of the upper respiratory tract may have been so slight that it was entirely forgotten by the time the complication developed. If the complication was arthritis, or the so-called rheumatism, it usually developed shortly after the initial tonsillitis. As a rule the more severe the attack of tonsillitis, the sooner have the complications manifested themselves.

Our observation has been that if the tonsillitis is severe, the complications generally ensue quickly; if mild they develop later in from one to eight weeks. In our own patients who have been seen during the initial attack and treated according to the plan to be described below, no complications have developed.

The prognosis of acute tonsillitis in which these organisms are found varies greatly with the treatment. All of our patients who have been treated with the autogenous vaccines have been relieved of all symptoms and no complications nor sequelæ, such as rheumatism, arthritis, etc., have developed. Patients treated in this manner have made unusually rapid recoveries from tonsillitis. Some of the acute cases were complicated by arthritis and nephritis, but these also have been cleared up by the treatment.

On the other hand, we have seen many patients in consultation long after the initial tonsillitis, who consulted us because of some obstinate condition as arthritis or some cardiac condition and these organisms have been in the tonsils as long as five years after the initial attack of tonsillitis. Many such patients have been relieved by the administration of autogenous vaccines and the enucleation of the tonsils.

We are therefore, led to believe that some of these complications might have been averted by the prompt administration of an autogenous vaccine during the acute tonsillitis. The pain and swelling in arthritis or rheumatic joints in a considerable number of patients of from one to five years' duration have been relieved by this treatment. In some cases in which great changes or bony ankylosis and exostoses have taken place in the joints, the treatment has stopped all evidence of activity as pain, redness and swelling of the soft tissues, leaving only the deformity.

In a group of cases in which in addition to the joint symptoms there were cardiac and renal changes great improvement has taken place.

The symptoms, complications and sequelae of these infections can best be described by reciting cases which illustrate types. These will follow after a few words in a general way on the treatment.

TREATMENT

This consists in eliminating the infection. The infection that causes the trouble is situated in the crypts of the tonsils. The culture is taken from the crypt. The surface of the tonsil is swabbed with 95 % of alcohol to get rid of mouth contamination. The sterile platinum loop is then immediately passed into a deep crypt of the tonsil and inoculated upon a culture plate. The plate is incubated for 24 to 36 hours at body temperature. The organisms are then identified and an autogenous vaccine prepared. We prepare our vaccine so that 1 c. c. represents 200 million of the organisms. This vaccine is then administered to the patient three times a week until all bacterial activity has stopped; and then the tonsils are enucleated unless there is some contraindication. The teeth are frequently found to be infected and if so the patient is referred to a competent dentist for appropriate treatment.

We believe that the administration of the autogenous vaccine not only stops the activity of the organism by overcoming the effect of the absorption of its toxins, but that it renders tonsillectomy a safer and more satisfactory operation. Frequently after tonsillectomy there is a low grade sepsis which is not only annoying to the surgeon, but also endangers the patient's life. For instance, we have seen several patients whose tonsils were enucleated for the relief of the rheumatic pains immediately have a sub-acute exacerbation of the attack which continued indefinitely, and the disease for the relief of which the tonsils were removed was not helped. Our experience with the autogenous vaccine treatment of these patients leads us to believe that much of this trouble might be averted by its use as a step preliminary to the operation.

CLINICAL REPORTS

The case reports which illustrate what has been said above will be brief. Their complete histories can be found in our hospital or private records.

1. Acute endocarditis, complicated by pericarditis with effusion, due to staphylococcus albus infection of the tonsils. Marked improvement following the eradication of his infection.

1.—J. S., male, age 27 years, was admitted to Gouverneur Hospital March 23, 1917. The diagnosis of acute endocarditis complicated by pericarditis with effusion was made. His temperature on admission was 104° F. He was dyspnoeic, with cyanosis of the lips and pallor of the face. He had all of the signs of being acutely ill. The tonsils were congested and painful.

Summary of Examination on Admission.—Hypertrophied heart, mitral regurgitation, painful joints, cyanosis of lips and extremities, dicrotic pulse, inflamed tonsils, and septic temperature.

This man gave a history of troublesome tonsillitis and rheumatism during his past life. The tonsils caused him almost constant trouble during childhood. When he came to the Hospital his heart was enormously enlarged and in a state of decompensation. The x-ray photograph gave a heart-shadow which almost filled up the whole lower thorax and abdomen.

For four weeks he was treated in the usual way in the hospital. His condition became worse. About April 20 we were asked to examine his tonsils. A culture made from the crypts showed a pure culture of staphylococcus albus. At that time he was so sick that all of us expected his death at any time. We had an autogenous vaccine prepared from his culture and gave him 200 million by hypodermic injection every other day.

Much to the surprise of all of us who had seen him, his improvement was rapid and continuous under the administration of the vaccine.

The following note on his condition was recorded on April 30, 1917, after he has received about five injections of the autogenous vaccine:

"Pericardial effusion was being absorbed. Area of cardiac dullness very much smaller. No friction. No cardiac decompensation."

He left Gouverneur Hospital May 20. His general condition as well as his cardiac condition was greatly improved. All of us who saw him when he was so desperately ill marveled at his recovery. Our opinion was that his tonsils should be enucleated, but he was satisfied with his improvement and refused to stay longer in the Hospital.

We might add a word in general on the treatment of such patients. We found a focus of infection in his tonsils, the staphylococcus albus, and the autogenous vaccines apparently cleared up his condition very rapidly. It is difficult absolutely to prove medical facts, but it appears that the vaccines saved the man's life. He was gradually getting worse under ordinary

treatment,—digitalis, sodi salicylate, bicarbonate of soda, etc.,—but as soon as he received vaccines his improvement began.*

We who have seen a considerable number of such recoveries are therefore convinced that the vaccines are efficient in suitable cases.

We have encountered some opposition both by physicians and patients to the removal of tonsils in patients with cardiac lesions. It has been our privilege to operate upon a score or more of patients with various cardiac lesions and without exception such patients have withstood the operations well and usually the heart lesion has improved after the tonsils were removed. These patients were operated upon because it was believed that the focus was in the tonsil. The question of tonsillectomy for such patients should, therefore, be carefully considered.

The question of anesthesia in these patients should also be carefully weighed. We have operated upon some under ether, and others under local anesthesia, considering carefully what is best for the particular individual. It seems to us that just as a focus of infection is searched for in arthritis, so also should a focus of infection be assiduously looked for in lesions of the heart, such as endocarditis, myocarditis, etc. We have frequently seen cardiac murmurs disappear and the heart become normal in function after the focus of infection had been removed.

2. Cervical Adenitis.—We have had a number of cases of involvement of the submaxillary glands due to a focus of infection in the tonsils. The organisms found most frequently in our experience have been the streptococcus viridans and a Gram-negative diplococcus. These two organisms have usually been found associated in each case.

M. P., a boy of sixteen years, was first seen when the glands at the angle of his left jaw were matted together in a mass as large as a golf ball. They were hard and we suspected a malignancy of the tonsil. The tissue removed from the tonsil was negative for malignancy, but cultures from the crypts showed streptococci viridans and a Gram-negative diplococcus. His tonsils had been operated upon once or twice previously, but the greater part of the left tonsil remained still in situ.

*This case is reported more fully in the New York Number (November, 1917, of the "Medical Clinics of North America," published by W. B. Saunders Co.).

He received autogenous vaccines and the glandular mass rapidly disappeared. He has had no recurrence during the three years which have elapsed since he was treated.

B. S., a young college man of 21, was referred to us in November, 1916, on account of enlarged submaxillary glands. There were two submaxillary glands on the right side, one the size of a hen's egg and the other about the size of a pigeon's egg. His tonsils were enlarged, but there was no history of tonsillitis. Cultures from the crypts showed streptococcus viridans and a Gram-negative diplococcus. In two days after his first injection of autogenous vaccine there was a noticeable decrease in the size of the glands. After five injections the glands were palpable, but not visibly enlarged. His tonsils were then enucleated and he made a rapid and uneventful recovery. There has been no recurrence during the year that has elapsed since his first treatment.

There are many other cases of chronic infectious arthritis that might be reported from our records with very happy results. This paper, however, is long enough.

CONCLUSIONS

1. Focal infections, especially those of the mouth, tonsils, teeth, and alimentary tract, to use the words of Prof. Osborne, of Yale, are "no fad," but realities to be looked for and eradicated if we are to cure our patients.

2. Autogenous vaccines from tonsils produce remarkable results quickly in suitable cases.

3. These foci of infections should be searched for in all patients, but especially those afflicted with cardiac lesions, arthritis, cervical adenitis, goitre and lesions of the nervous system too often passed up as neurasthenia.

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DISCUSSION

Dr. G. E. Adkins, Jackson, Miss.—It seems to me that these last two papers had better been read before the General Session. It would have eliminated a great deal of their program, the subjects covering most of medicine. I was notified yesterday that I was to open Dr. King's discussion. I have received no synopsis of this paper, but have read a great deal of Dr. King's writings that he has published and have had some experience along the same lines. In the latter part of 1916 I began to have patients presenting a clinical history such as Dr. King has outlined. They were cases of arthritis, en-

larged hearts, high blood pressures, etc. A great many of these gave no history of acute inflammatory trouble, referable to the tonsils or the teeth, but in each case we could express some foreign matter from the crypts or chronically inflamed tonsils or show an eroded mucous membrane, or abscess at the roots of the teeth by an x-ray picture. From the crypts of these tonsils and the roots of the extracted teeth we could grow a Gram-negative anaerobic diplococcus. I took cultures and had the bacteriologist examine them for a Gram-negative diplococcus and received the statement that he could find a small Gram-negative diplococcus resembling the Neisserian except that it was smaller. This is practically word for word the way the Doctor had laid it down in his article. I recall a case of a man of about forty with a blood pressure of two hundred and twenty who gave absolutely a negative history of an acute tonsillitis or any pain in the teeth, but on x-ray examination the roots of the teeth were eroded so that there seemed to be an abscess at the roots. He allowed us to extract the teeth when we found no abscess. Still we had the eroded teeth roots. We grew a culture from the roots of these teeth and made a vaccine which, when administered, brought the blood pressure down to one hundred and forty. There were several cases that we treated in this way.

Our laboratory man finally grew skeptical as to a new infection. He believes that he can grow this Gram-negative diplococcus not only under anaerobic conditions, but in the presence of free air. He thinks that he can grow it back into a staphylococcus. He does not believe that it is an individual micro-organism. Dr. King made the statement that he had injected the pure culture into the peritoneal cavity of the guinea-pig and produced no symptoms. I do not see how we could inject a staphylococcus or any other pus-forming micro-organism into the peritoneal cavity of a guinea-pig without producing symptoms.

Another thing is that if we had a patient absorbing pus that was producing arthritis and if we removed the local infection, I do not see how it would be possible for the condition to clear up and the patient be free from all pain within from four to six hours after the removal of the tonsils unless that were the cause. It seems to me that we are shutting off the intake of the toxin and relieving the patient immediately. Of course no one discredits the theory of Rosenow and there is no doubt that the action of these micro-organisms has a part and the greater part. I believe, however, that when it is worked out, we shall find a non-pus-producing organism which does not produce gas. Consequently, it does not produce pain when in a closed cavity. On the other hand, it does produce a powerful toxin that is readily absorbed by the patient.

Dr. O. Dulaney, Dyersburg, Tenn.—I had the pleasure of hearing Dr. King read a paper at the Pittsburg meeting of the American Academy. I also took part in the symposium on "Diseased Conditions as the Result of Infected Tonsils." My paper was "The Infected Tonsil as an Etiological Factor in Relation to Chorea." I re-

ported a series of fourteen cases of chorea due to infected tonsils and adenoids. In all these cases, with but one exception, endocarditis was present. Endocarditis has been associated with infected tonsils for a long time, with the infection primarily in the tonsils. Dr. King spoke of the eroded condition of the orifices of the lacunae. It is true that you may find, in many of the old infective tonsils, an extremely eroded condition. Also an intense hyperemia of the pillows with a line of demarkation. This is peculiar to the infected submerged tonsils in the cases reported. Transillumination is a valuable adjunct in making a diagnosis. I have a small light of the DeZang type. With this you can find the tiny pus pocket in the tonsil.

One patient with chorea refused operation and at the time we did not insist on account of endocarditis and suggested that this be done later. He had nodules all over the extremities. One of the nodules was removed from the scapula and a culture was made from it, which showed a streptococcal infection. An autogenous vaccine was made and given and the patient's symptoms of chorea cleared up rapidly.

Dr. R. Caldwell, Little Rock, Ark.—I heartily concur in all that Dr. King has said concerning focal infection, especially focal infection in the tonsil. The internist sends the case to us with the question, should the tonsils be removed? In these cases I examine the tonsils and the sinuses, then make a blood examination and urinalysis, and finally adopt the method of treatment that sound judgment dictates. In examining the tonsils I see whether I can squeeze out pus and then make a culture from it. That is my way of making an examination.

I can report some successful cases, as many of you have done, and also some that have not been successful. I have now under my care a lady with a great deal of rheumatic trouble. I removed the tonsils and she still has the rheumatism. I have a boy now under treatment for keratitis whose tonsils were removed three weeks ago, and who is absolutely no better. Other examinations were negative in this case. The lady has had an autogenous vaccine used; the boy, none. The lady has plenty of money and can afford it. The boy's means are limited and so I have not tried the vaccine. She takes cold and gets worse. Therefore I wonder whether she gets the rheumatic infection directly through the mucous membrane when she has a cold.

I should like to ask Dr. King what examination he makes of the tonsil, and also, given a case of rheumatism with all other examinations negative, what is the test for the tonsil? The physician comes to me and wants to know whether it is worth while to have the tonsils removed; and I have a great hesitancy in knowing what to tell them.

Dr. Henry T. Fisher, Knoxville, Tenn.—I just want to make a report of two cases of endocarditis that were referred to me by an internist within the last few months, in which I enucleated the tonsils under local anesthesia. In both cases,

I am proud to say, the patients are getting along nicely, and every one is well pleased.

There are some other things that I have noticed. Within the last few months I have had four cases of enlargement of the thyroid in which I removed the tonsils, and some of them, so far as appearances are concerned, have not had any enlargement since. The last patient, who was suffering from symptoms of hyperthyroidism, is getting along about as nicely as any patient could. I have not, perhaps because I have not searched the literature enough, seen any such cases reported; but I have been reading along that line. I should be glad to hear from Dr. King what his experience has been in regard to the relation of the tonsils to enlargement of the thyroid.

*Dr. James J. King (closing).—*In this meeting I did not think it wise to take up the bacteriology of the Gram-negative organisms that Dr. Adkins described. That is in the hands of the Board of Bacteriologists now, and we will leave that question to them for settlement.

About the examination of the tonsils I would say that when the patients come to me I inspect the tonsils after the history has been taken. I examine the glands of the neck and inquire concerning any history of tonsillitis. I squeeze the tonsils to see whether I can find any evidence of pus; and in all cases of simple focal infection I take cultures from the throat. We usually find organisms there and I make vaccines from the organisms that we find. Even if these organisms are thought to be non-pathogenic, I have this done. Sometimes bacteriologists do not want to do it because the organisms are not considered pathogenic, but I insist on having vaccines made from the organisms in the tonsils. This requires great care. The ordinary hospital bacteriologist is not ready to help us much and makes all kinds of excuses. I take my cultures myself, look at them the next day, and superintend the work that is carried out by the bacteriologist. I watch it and go over it with him.

You have to be thorough in these cases. Giving vaccines and removing the tonsils are not going to cure all cases. There are a few cases that have not improved under the use of vaccines. I thought that I made it clear in the paper that all did not get well. I said that we have had a cure in at least one case of each type mentioned. We have some patients that have come to us for treatment and have not been cured. You have to search deeply for the focal infection. If the tonsils are infected the teeth are also likely to be. It is a good thing to investigate the genitourinary tract, which is a fruitful source of infection. If it is due to the gonococcus, the re-

moval of the tonsils will not cure the patient. The tonsil is only one link in the long chain.

A good thing was brought out in the Pittsburgh meeting, and that is the standardization of examinations of the tonsils. If all laryngologists would agree on the necessary things to be done it would be a good thing.

In regard to my experience with goiter, I have had some cases that I thought were due to infection of the tonsil. There were only two or three cases of this sort, and in them the goiter has gone down. I think that many cases may be due to infection of the tonsils.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

Facts and Fancies About Tonsils. Henry L. Swain, New Haven, Conn. New York Medical Record, Vol. 93, No. 25, June 22, 1918, p. 1069.

The article deplores the very general tendency to consider the tonsils and their enucleation so lightly that tonsillectomy is being recommended for the cure of all sorts of internal troubles regardless of the condition of the tonsils or the history of previous trouble with them. Also whenever there is a history of sore throat it is becoming the habit, both professional and lay, to demand the complete removal of every vestige of tonsillar tissue even in young children, as if all sore throats were of tonsillar origin. Furthermore, the modern clinician is prone to think that no other worth-while method exists to combat tonsil trouble, or the supposed results of disease of these structures except tonsillectomy. All of the above seem to lead to the thesis that as the tonsils are of no account, anyway, why not always remove them from everybody? The article proceeds to prove this last proposition as both illogical and utterly unscientific, suggesting that as tonsil (lymphoid) tissue of some sort is always present and active in all ages in the human being, it probably is there for some good and wise purpose. Therefore, we should endeavor to prove the tonsils guilty of making trouble before removing them either in young or old, but especially in babes or any young children. The method of Dr. French, of Brooklyn, by transillumination, often would clear up a doubtful case. Finally, Dr. Swan's experience and that of others could be called upon to demonstrate that many times much simpler procedure than tonsillectomy could bring about equally as good results in the way of cure of local and focal diseases. Tonsillectomy is a major operation of immense value when needed, but never to be entered into unless it alone can do the work, for there are attendant dangers which should not be minimized.

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*Dr. SEALE HARRIS, Editor
 Dr. M. Y. DABNEY, Acting Editor
 Dr. J. R. GARBER, Associate Editor
 C. P. LORANZ, Business Manager

*Major, Medical Reserve Corps, U. S. Army, on active duty overseas. Granted leave of absence for period of war.

VOL. XI

NOVEMBER 1918

No. 11

EDITORIAL DEPARTMENT

POSTPONEMENT OF ASHEVILLE MEETING

To the Members and Friends of the Southern Medical Association:

At this late hour it is with deep regret that we find it necessary to postpone for a year the twelfth annual meeting of the Southern Medical Association which was to have been held at Asheville, North Carolina, November 11-14. The reason for this is the epidemic of influenza which has reached every nook and corner of our territory, and is now engaging the attention of the profession to such a degree as to render it impossible for them to leave home for some time to come.

To the untiring efforts of the Asheville Committees on Arrangements, to the officers of the Section on Medicine, Section on Pediatrics, Section on Public Health, Section on Surgery, the Southern States Association of Railway Surgeons, Section on Eye, Ear, Nose and Throat, and the Conference on Medical Education, who under the greatest difficulties have gotten up what is probably the best program ever presented to the Association; to the officers and members of the American Association for the Study and Prevention of Infant Mortality, to the National Malaria Committee, the American Society of Tropical Medicine and the Southern Gastro-Enterological Association, who were to meet conjointly with us; and to the various distinguished guests who had consented to attend our convention, we wish to express our especial disappointment at this unexpected and unfortunate turn of events.

The various papers that were to have been read will be published during the coming year in the JOURNAL so that there will be as little break as possible in the record of the scientific advancement of Southern medicine and surgery.

Next year the Association confidently expects to have the greatest meeting in its history and trusts you will make your plans to be with us then.

Respectfully,
 LEWELLYS F. BARKER, M.D.
 President,
 Baltimore, Md.
 H. H. MARTIN, M.D.,
 Chairman of Council,
 Savannah, Ga.
 C. P. LORANZ,
 Business Manager,
 Birmingham, Ala.

October 15, 1918.

We desire further to announce that the American Association for the Study and Prevention of Infant Mortality, the National Malaria Committee, the American Society of Tropical Medicine and the Southern Gastro-Enterological Association, which were to meet concurrently with us, have been indefinitely postponed.

SURGEON-GENERAL IRELAND*

Major - General Merritte W. Ireland, M.C., U. S. Army, appointed Surgeon-General of the Army by the President on October 3, was born at Columbia City, Indiana, on May 31, 1867. He was graduated from the Detroit College of Medicine in 1890, and after serving as interne in St. Mary's Hospital, Detroit (1889-90), received another medical degree from Jefferson Medical College, Philadelphia, in 1891.

Desiring to enter the Army Medical

*Those members of the Southern Medical Association who were in attendance at the Dallas meeting, November, 1915, will recall with pleasure having met General Ireland (then Lieutenant-Colonel Ireland), who at the time was stationed at Fort Sam Houston, Texas, and who came to the meeting as the personal representative of General Gorgas, who himself had found it impossible to attend.

Corps, he immediately went up for examination and was commissioned Lieutenant and Assistant Surgeon on May 4, 1891, his first assignment being at Jefferson Barracks, Missouri. On May 4, 1896, he was promoted to the grade of Captain. During the Spanish-American War, he served with the Fifth Army Corps in Cuba and at Wyckoff, N. Y. On April 17, 1899, he became Surgeon and Major in the 45th U. S. Infantry, proceeding to the Philippines, where he served in several campaigns with high commendation. In April, 1900, he was placed in charge of the Medical Supply Depot at Manila and was honorably discharged from the volunteer service on June 30 of the same year.

From 1902 to 1912 he had a continuous period of service in the Surgeon-General's Office, under Surgeons-General O'Reilly and Tarney, being in charge of the Division of Personnel. In this capacity he required a close knowledge of the medical personnel of the Army and was recognized as one of the most energetic and able officers on the Surgeon-General's staff.

He attained his majority in the Regular Army on August 3, 1903, and became Lieutenant-Colonel on May 1, 1911.

On April 29, 1912, he was again sent to the Philippines as Post Surgeon at Fort William McHenry, and in 1916 he was

commissioned to take charge of a Base Hospital at Fort Sam Houston, Texas, where he served until the declaration of the present war.

He left for France with General Pershing's staff on May 28, 1917, serving under General Bradley, Chief Surgeon of the American Expeditionary Forces, as Chief of the Division of Personnel, until May 1, when he became Brigadier-General, succeeding General Bradley as Chief Surgeon. His service in France has been continuous to date.

General Ireland is recognized as one of the most efficient and forceful officers in the Medical Corps of the Army, and his experience has covered every variety of service. He has been a post officer on the far Western coasts; as a surgeon of volunteers, he was executive officer in the hospital at Siboney, Cuba; in the Cavite and Camarines campaigns in the Philippines (1900), he took part in ten engagements; and later was in charge of a Medical Supply Depot in the

Islands; he has had ten years' official experience in the Surgeon-General's Office at Washington, which, with his experience on the Western front, covering nearly a year and a half, eminently fits him for his new position.

He was universally popular in France, and, esteemed as he is for his vigorous and soldierly personality, the good wishes of his Corps and the whole medical profes-



SURG.-GEN. MERRITTE W. IRELAND
Major-General, Medical Corps, U. S. Army.
Photo by Harris and Ewing

sion go with him. We wish the new Surgeon-General the same success which has characterized the brilliant administration of his predecessor, General Gorgas.

INFLUENZA EPIDEMIC

Influenza, the most contagious disease known, which is now raging from coast to coast, is, and has been, playing havoc in Europe as well as in our own country. In 1889-1890, it swept over the whole world with a rapidity that was truly remarkable. It is, therefore, not a new thing even though its exact causative agency is still a debated point.

While thousands are being stricken with this malady and many are dying,—mainly from pneumonic complications, — clinicians have everywhere been seeking in vain to find some easily-applicable means of preventing its fire-like spread which has done so much damage to the Army camps and to the civil population.

COMPLICATIONS

While the number of complications is large and varied, extending all the way from involvements of the nasal accessory sinuses and mastoid to a severe cystitis, by far the most serious and fatal is pneumonia, which exacts a frightful toll. Especially does it seem to be fatal in pregnant women, who almost invariably abort and usually die.¹ In view of the marked tendency to a speedy miscarriage and an all-but-certain death when an enceinte woman contracts an influenzal pneumonia, and considering the known seriousness of pneumonia in general during pregnancy, is it too strict a rule to make to insist that every pregnant woman during such an epidemic wear a proper face mask all the time, no matter how seemingly safe and secluded she may be from a standpoint of contact with those infected?

VACCINES

Various experimenters have advocated the use of vaccines of the *B. influenzae* of Pfeiffer. However, there has been no uniformity of results obtained, so that its use at present can not be endorsed.

DRUGS

Salicylates, in quantity sufficient only to control headaches and pains throughout the body, may be employed. Yet the idea of saturating the system with them is rather to be condemned than approved, since they are not specifics by any means, and, if used excessively, merely add materials for excretion to the already plentiful toxins which are necessarily formed in large quantity.

The only therapy upon which opinion is unanimously agreed is fresh air and forced fluids, to which many add alkalization. For example, a glass of water with 10 grains of sodium bicarbonate every hour when awake, may be ordered.

SPRAYS

However varied the symptoms may be after infection, the portals of entry are the respiratory mucous membrane and the mouth; and hence sprays and gargles of such substances as peroxid of hydrogen, liquor antisepticus alkalinus, liquor sodii boratis compositus, etc., have been recommended. At the same time, other authorities of equal force claim that a solution strong enough to kill the infecting organism will prove an irritant to the mucous membrane, thus rendering it even more susceptible than normal to the invasion of the micro-organisms. Furthermore, otologists say that it is a matter of common observation that much harm is done by spraying the nose in that infective discharges are frequently flushed through the Eustachian tube into the middle ear, where serious trouble is set up. However, there can be no objection to a mild mouth wash and gargle, as, for instance, one of Dobell's solution diluted

1. See article by Dr. Frank A. Jones on page 732 and another by Dr. F. A. Lupton on page 754 of this issue.

with two or three times its volume of warm water.

MASKS

In any epidemic the all-important thing is checking its spread. Quarantine, if rigidly carried out, would doubtless be effective, but the consequent paralysis of business would render it at least highly undesirable. Fortunately, a much simpler protection is at hand and that is the face mask properly made of suitable gauze. Its use in all the Army camps in this country and in many of the civilian hospitals has proven its value beyond peradventure.

Doust and Lyon,² in a series of careful experiments with different thicknesses of gauze, condemn masks made of coarse mesh even in many layers as being unsafe, and recommend three layers of "butter-cloth," being careful to cover the nose as well as the mouth.

THE GOVERNMENT'S ADVICE

The Volunteer Medical Service Corps has sent out a letter to its following throughout the country, which we take pleasure in reproducing here, even though some of its suggestions are at variance with our own ideas on the subject:

October 16, 1918.

From: Volunteer Medical Service Corps,
Council of National Defense.
To: Members of State Executive Committees and County Representatives, Volunteer Medical Service Corps.
Subject: Influenza Epidemic.

1. In view of the present serious epidemic which is sweeping over the country, the Volunteer Medical Service Corps earnestly invites your attention to the following important action:

Urge upon the members of the Volunteer Medical Service Corps that they instruct families under their care to guard against the epidemic by:

Thorough cleanliness of houses, premises, clothing, utensils, and personal cleanliness.

Avoid stirring up dust.

Wash; scrub; flush; sprinkle; and use soap and water thoroughly.

Gargle and spray the nose and throat with an alkaline antiseptic fluid frequently.

Co-operate at once to the fullest extent with the local, state and national boards of health.

2. Doust, B. C. and Lyon, A. B.: "Face Masks in Infections of the Respiratory Tract", Jour. of the American Medical Association, LXXI, 15, Oct. 12, 1918.

Urge and co-operate in preparing towns and cities for the epidemic by establishing emergency hospitals in suitable buildings, by districting communities, and apportioning or dividing medical forces comprising men and women physicians and nurses so that no portion of the community is without medical care.

Circulate as thoroughly as possible and explain to the public the warning and directions printed by the United States Public Health Service and by local health authorities.

Urge the importance of fresh air and the avoidance of chill and overheat.

In fighting the epidemic give no medicine and use no treatment which may depress the vital forces, especially the heart, of the patient.

2. The Army and Navy are fighting and conquering Germans. We must fight and conquer germs without taking anything away from the Army and Navy. Don't ask the Army and Navy for medical and surgical supplies. Use simple utensils for sterilizing; the simplest kinds of beds and bedding; make your own masks and dressings, and fight for yourselves.

3. While the epidemic is on, do no surgical operations unless absolutely necessary to save life.

4. In every way in your power urge the members of the Volunteer Medical Service Corps to co-operate to the fullest extent with the United States Public Health Service and with State and local health authorities.

EDWARD P. DAVIS,

President, Volunteer Medical Service Corps.

THE UNITED WAR WORK CAMPAIGN

The JOURNAL has derived great pleasure in devoting some of its space to every phase of war activities in the past; and as long as "Uncle Sam" tells us his boys need certain things for their happiness, comfort and safety, it will do its share in spreading the call. In the past, separate campaigns have been conducted for donations to the Y. M. C. A., Y. W. C. A., K. of C., Jewish Welfare Board, War Community Service, American Library Association and Salvation Army, but it has been deemed expedient to weld these seven war work agencies into one appeal to be worked out under the United War Work Campaign. Each organization has its essential and individual services for the people and the \$250,000,000 that is to be during the campaign from the Turo In-trench duty 11-18 will be proportionately among these seven societies.

The JOURNAL feels that it is rather pertinent, and surely a waste of time, to remind its readers or others of the profession that it is a special privilege and a peculiar duty for each one to support the campaign to the best of his or her financial ability. That all of us want to lend a helping hand is natural and that all of us will laden this helping hand with riches and treasures for the American lads and allied comrades, is assured. Therefore, let the profession that is forever extolled for its patriotism, fidelity and sacrifices furnish undeniable proof of its endorsement and of its desire for maximum success in the approaching campaign.

Southern Medical News

ALABAMA

University of Alabama, School of Medicine, Mobile, has a unit of the Student Army Training Corps. Dr. D. H. Wright, Berry, has been appointed a member of the draft board of Fayette County, vice Dr. J. H. Ashcraft, resigned.

Dr. E. L. Curlee, Anniston, has been appointed a member of the Calhoun County draft board. Dr. L. W. R. Moore, Mobile, was recently elected Inspector of Mobile schools, vice Dr. H. T. Gaines, resigned to enter the Medical Reserve Corps.

The Anti-Tuberculosis Association of Birmingham recently announced the purchase of a permanent home for a dispensary.

Dr. Abraham Trumper, formerly connected with the State Board of Health, and for the past four years with the United States Public Health Service, will be temporary Director of the State Laboratory. He takes the place of Dr. R. F. Salter, resigned to enter the Medical Reserve Corps.

Dr. D. C. Steelsmith, Health Officer for the City and County of Tuscaloosa, has accepted a position on the faculty of the Iowa State University at Iowa City, Iowa.

Alabama's part of the \$1,000,000 appropriated by the United States Government to fight social diseases is \$23,000, and this amount has already been turned over to the State Board of Health. Dr. W. C. Blasensigne is in charge of the crusade in the State. Dr. H. Buford Innis, colored, has charge of the work among the Negroes.

The Executive Committee in charge of the Volunteer Medical Service Corps work in Alabama consists of Dr. S. W. Welsh, Chairman; Dr. H. G. Perry, Secretary; J. C. Anderson, E. J. Baldwin, I. L. Watkins, A. M. Steel, B. L. Wyman, Cunningham Wilson, and Louis Morris.

Dr. John M. Anderson, Montgomery, had a narrow escape from death several weeks ago when his machine skidded and dashed into a telegraph pole, demolishing the car. While Dr. Anderson sustained severe injuries, he is reported as recovering.

Dr. R. M. Cunningham, Birmingham, accompanied by Mrs. Cunningham and their two children, is spending the winter at Daytona, Fla.

Deaths

George V. Bush, Dawson, aged 49, died in Columbus, some weeks ago following an operation for cancer.

Dr. F. E. Fennell, Florence, aged 77, died at his home of cerebral paralysis.

Dr. H. Thomas, Huntsville, aged 30, died October 11 from influenza pneumonia.

Dr. W. B. England, Huntsville, aged 36, died October 15 at his home from influenza pneumonia.

Dr. R. S. Allen, New Hope, died October 7 from influenza pneumonia.

Dr. Wade Hampton Esslinger, Newmarket, died early in October from influenza.

ARKANSAS

The Tenth District Medical Association held its regular meeting at Fort Smith, September 17. A surgical clinic at Sparks Memorial Hospital was an addition to the regular program. Dr. J. M. Taylor, Fort Worth, was elected President; Dr. H. D. Wood, Fayetteville, Vice-President; and Dr. O. M. Bourland, Van Buren, Secretary-Treasurer.

Dr. St. Cloud Cooper, Fort Smith, has resigned as a member of the State Board of Health.

Dr. J. C. Geger, who has been in charge of the U. S. Public Health Service work at Lonoke, has been transferred to the Little Rock district, succeeding Captain Weldon.

The Third District Medical Society, which was to hold its annual meeting in Lonoke, has postponed the meeting until next year, due to disturbed conditions.

Dr. Joseph M. Brewer has moved from Mountain View to El Dorado.

Dr. J. R. Dale, Texarkana, has been appointed a member of the Western Arkansas District Appeal Board, vice Dr. C. H. Cagle, Bentonville, resigned.

Deaths

Dr. Moses R. Clegg, son of Dr. J. T. Clegg, Shiloh Springs, died August 10 in Honolulu. Dr. Clegg was in the Government service and was well known because of his research work in leprosy.

Dr. Marion M. Norton, Lake Village, aged 45, died early in August.

Dr. J. C. Wallis, Arkadelphia, aged 64, died at his home October 10.

Dr. J. R. MacDaniel, Arkadelphia, aged 78, died at his home September 18 from cerebral hemorrhage.

Dr. J. E. T. Hoffman, Little Rock, aged 51, died at his home September 17 from cerebral hemorrhage.

Dr. J. B. Custer, Bismarck, aged 56, died at his home September 17.

Dr. J. E. Wylie, Little Rock, aged 68, died at the home of his daughter in Los Angeles, Cal., several months ago from nephritis.

Dr. H. Wright, Little Rock, aged 33, died at his home October 11.

Dr. S. J. Ozment, Fort Smith, aged 52, died October 17 from influenza pneumonia.

DISTRICT OF COLUMBIA

Surgeon-General Rupert Blue, Chairman National Malaria Committee, has announced that the meeting of the committee scheduled for Asheville, N. C., November 11 has been indefinitely postponed on account of the influenza epidemic.

The District of Columbia Tuberculosis Dispensary was recently opened with Dr. W. D. Tewksbury in charge, and Drs. Everett M. Ellison and Thomas Miller, assistants. Dr. W. H. Merrill is roentgenologist.

Dr. Harry S. Bernton has been appointed Chief of the Bureau of Preventive Diseases and Director of the Serologic and Bacteriologic Laboratories of the District of Columbia Health Department. He was formerly Bacteriologist of the Rhode Island State Board of Health.

Dr. E. W. Titus has been named Deputy Colonel, vice Dr. W. Browne Carr, resigned to enter the Army Medical Service.

By the new appropriation act the District of Columbia will have additional medical and dental inspectors of public schools, and an increase in the number of school nurses. Provision is also made for four dental clinics in the public schools.

Dr. Grace Lynde Means, Washington, and Thomas Crowder were married recently at Keokuk, Iowa.

Director-General McAdoo has named a Committee on Health and Medical Relief for the Railroad Administration consisting of Dr. J. E. Danoff, Chairman, Dr. George W. Cade, Jr., St. Louis, Dr. Victor G. Helzinger, New York, Dr. Thomas R. Crowder, Chicago, and Dr. Henry M. Bracken, St. Paul.

Dr. Howard F. Strine, Commander, Medical Corps, U. S. Navy, has been named Associate Professor of Principles and Practice of Medicine in Georgetown University Medical School, and Acting Chief of the Surgical Department at University Hospital.

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men societies.

Garfield Memorial Hospital, Washington, receives a bequest of \$20,000 from the late William Pitt Kellogg, former Governor of Louisiana, who died recently in Washington.

Deaths

Dr. Frank Baker, Washington, aged 77, died at his home the last of September.

Dr. W. B. Hudson, Washington, Captain, M.R.C., U. S. Army, was killed in France the first of August by the explosion of a shell while caring for the wounded on the western front.

Dr. J. E. Keene, Washington, aged 54, died October 12 at his home.

FLORIDA

Summer residents of the city of Deland have given a site for a hospital and a donation of \$5,000 toward the erection of the building. It is expected that as soon as war conditions will permit the work to begin that sufficient funds will be in hand.

The Florida Hospital for the Insane, Chattahoochee, will be in charge of Dr. W. M. Bevis, the Assistant Superintendent, during the absence of Dr. Mason Smith, the Superintendent, who has been granted a leave of absence for war service.

Dr. Frederick J. Walter, Daytona, President of the State Medical Association, has returned home after being away three months.

The Executive Committee having in charge the work of organizing the profession for service in the Volunteer Medical Service Corps is composed of Dr. Cary P. Rogers, Jacksonville, Chairman; Dr. Frederick J. Walter, Daytona, Secretary; Dr. John S. Helms, Tampa; and Dr. James M. Jackson, Miami.

Dr. R. C. Boothe, Fort Pierce, has been appointed a member of the local draft board, Vice Dr. W. E. VanLandingham, removed to West Palm Beach.

New Augustine is to have a hospital to be known as the Worley's Hospital, the authorized capital stock being \$20,000.

Deaths

Dr. Russell H. Dean, Jacksonville, aged 63, died at his home September 28 from cerebral hemorrhage.

Dr. J. D. Cuskins, Jacksonville, aged 38, died October 3 from pneumonia.

Dr. A. L. Rettinger, Pensacola, aged 55, died September 20.

Dr. W. C. Buffalow, Jacksonville, aged 33, died October 11.

Dr. G. W. Davis, Chattahoochee, died October 5.

GEORGIA

The City of Macon has voted a \$75,000 bond issue for the erection of a city hospital to include a tuberculosis department.

Plans are being made for a 34-bed hospital for Brunswick.

The United States Marine Hospital, Savannah, will be enlarged, \$175,000 having been appropriated for the work. Plans are now being drawn.

The Scottish Rite Hospital for Crippled Children, Atlanta, has let the contract for the erection of a new plant to cost \$300,000.

Dr. J. W. Palmer, Ailey, has been appointed a member of the State Board of Medical Examiners for a four-year term beginning September 1. At a meeting of the Board held October 9 Dr. Palmer was elected President; Dr. A. F. White, Fovilla, Vice-President; and Dr. C. T. Nolan, Marietta, Secretary-Treasurer.

Savannah Marine Hospital Annex, with accommodations for twenty-four patients, was opened September 16.

The Seventh District Medical Society met at Rome on October 9. Dr. McCord, Chairman of the Committee on Legislation, suggested that the members use their efforts to have medical inspection of schools in their home towns. Next regular meeting March, 1919.

Dr. Lawrence Lee, Savannah, now Captain, Medical Reserve Corps, Camp Greene, had his leg broken when he fell from a horse the latter part of September.

Dr. Floyd W. McRae, Atlanta, is Chairman of the Executive Committee and of the State Committee, Volunteer Medical Service Corps.

Deaths

Dr. Walter Whitney, Augusta, Major, Medical Reserve Corps, U. S. Army, aged 69, died September 1 from heart disease at the Augusta Arsenal.

Dr. Gustavus P. Folks, Waycross, aged 60, died at his home September 23 from nephritis.

Dr. George Roy Heaton, Rockmart, aged 31, died at his home September 21 from an overdose of medicine.

Dr. John B. Sanders, LaGrange, aged 55, died at his home September 15.

Dr. J. D. Chason, Bainbridge, aged 56, died October 13 at his home from heart disease.

Dr. Edward Marcus Smith, Valdosta, aged 23, died early in October in Philadelphia from influenza pneumonia. He was in the Medical Reserve Corps, U.S.A.

Dr. James R. Hughes, Atlanta, aged 36, died at his home October 12 from influenza pneumonia.

Dr. William N. Carter, Columbus, aged 37, died October 13 from pneumonia.

KENTUCKY

Kentucky's part of the one million appropriated by the Government to fight social diseases is \$25,000. An active campaign is now in progress.

The War Department has authorized the construction division to proceed with the erection of a 2,500-bed hospital at Camp Knox, Sifton. It will cost approximately \$2,491,600.

Miss Sophia Steinhauer, Dayton, Superintendent of Speers Hospital, has been appointed President of the Kentucky State Board of Nurse Examiners. The other members of the Board are: Miss Flora Keen, Somerset, Secretary; Miss Ella Davis, Owensboro; Miss May Foreman, Paducah; and Miss Alleta Miller, Lexington.

The Illinois Central Railroad is soon to begin the erection of a \$150,000 hospital at Paducah.

The Henderson County Institute held its regular meeting September 23.

Deaths

Dr. Joseph T. Bright, Covington, aged 76, died at his home September 3.

Dr. James Morrison Ray, Louisville, aged 56, died October 11.

Dr. A. Gatliff, Williamsburg, aged 70, died October 14.

Dr. C. O. Henry, Maysville, aged 37, died October 13 from influenza pneumonia. He had just passed his examination for the Medical Reserve Corps, U. S. Army.

Dr. J. H. Reynolds, Louisa, aged 48, died October 9 from influenza pneumonia.

LOUISIANA

School of Medicine, Tulane University, has a unit of the Student Army Training Corps.

A cablegram announces the safe arrival of the Loyola Hospital Unit No. 102 in Italy the latter part of August.

Major Isadore Dyer, of New Orleans, after two months' service in the Surgeon-General's office, Washington, is back at his station in New Orleans.

The Pines, the Shreveport Sanatorium of the Anti-Tuberculosis League, has completed plans for a new building. Ground will be broken this month. The building will be located eight miles from Shreveport on a fifty-four-acre site.

Arrangements are being made to establish in Shreveport, and other principal cities of the State, clinics for the treatment of communicable diseases.

Dr. J. A. Danna, Major, M.R.C., U. S. Army, head of the Loyola Hospital Unit, has been made Lieutenant-Colonel.

Deaths

Dr. John J. Laurans, New Orleans, aged 56, died at his home September 21 from angina pectoris.

Dr. W. T. Richards, New Orleans, aged 39, Chief Surgeon Presbyterian Hospital, died October 14.

Dr. T. L. Vaught, New Orleans, aged 35, died October 2 at Camp Gretna, Mexico.

Dr. M. J. de Mahy, New Orleans, aged 32, died October 15 from influenza pneumonia.

Dr. Vincent J. Jastronski, Mortagne, aged 49, died October 18 from influenza pneumonia.

Dr. J. Hornbeck, New Orleans, aged 41, Intermittent at Charity Hospital, died October 15 from influenza pneumonia.

Dr. W. O. Schultzman, Baton Rouge, aged 26, died August 28.

Dr. Joseph F. Baldwin, former Interne at Turin Infirmary, New Orleans, was killed while on trench duty in France attending the wounded.

MARYLAND

Dr. Alma Rothholz, Baltimore, has been requested by Queen Elizabeth, of Belgium, to take charge of a hospital for babies of Belgium. Dr. Rothholz has distinguished himself as a war worker in France.

The Maryland State Hospital Train was sent to Fall River, Mass., to combat the spread of influenza within eleven hours after the call was received, which came through Surgeon-General Blue, of the U. S. Public Health Service. This is the first time the train has been put in service since its equipment. Dr. Daniel Z. Dumott, Chief Surgeon of the Western Maryland Railroad, is in charge of the train.

Dr. James J. Murphy, Annapolis, has been appointed Health Officer of Anne Arundel County, vice Dr. Walton H. Hopkins, resigned to go into the Army Medical Service.

Dr. J. Whitridge Williams, Baltimore, has been appointed Chairman of the Maryland State Executive Committee of the Volunteer Medical Service Corps. The other members of the Committee are: Dr. Frederic V. Boitler, Dr. Victor Cullen, Dr. J. Mason Hundley, Dr. Ridgely B. Warfield.

Dr. John M. T. Finney and Dr. Wm. S. Thayer, Colonels, Medical Reserve Corps, have been nominated by the President to the rank of Brigadier-General.

Dr. H. R. Carter, Baltimore, Assistant Surgeon-General-at-Large, U. S. Public Health Service, has recently inspected the camps in Louisiana, Texas and Virginia. Dr. Carter is an authority on malaria and malaria control.

Dr. Thomas B. Horton, Curtis Bay, was married to Mrs. Grace H. Norwood, of Baltimore, on September 21.

Dr. James H. Mason Knox, Jr., Baltimore, after a year of service in France, has returned. He helped to organize the work of the Children's Bureau, a part of the Civilian Relief Work of the Red Cross in France.

Drs. Wm. A. Fisher, George Walker and Wm. S. Baur, Baltimore, have been detached from the Hopkins Unit, and have been advanced to the rank of Lieutenant-Colonel.

Dr. Archibald C. Harrison, Baltimore, University of Maryland Unit, has been advanced to the rank of Lieutenant-Colonel.

Dr. James M. Palmer, Jr., Cumberland, was married to Miss Ruth Maxwell, of Morgantown, W. Va., September 2.

Dr. Thomas R. Barges, Baltimore, Lieutenant-Colonel, Medical Corps, U. S. A., was recently made Chief Medical Consultant for the Air Service of the American Expeditionary Forces and attached to General Headquarters.

Deaths

Dr. George Wells, Annapolis, age 74, died at his home September 28.

Dr. Charles R. Schoemaker, Baltimore, age 46, died at his home October 6 from influenza.

Dr. Silas Baldwin, Baltimore, age 71, died at his home October 2 from cerebral hemorrhage.

Dr. James Allen Etheridge, Baltimore, Lieutenant, Medical Reserve Corps, U. S. Army, age 26, died in Johns Hopkins Hospital October 7 from influenza.

Dr. Albert Tyler O'Handers, Baltimore, age 42, died October 15 from influenza pneumonia.

Dr. George Wells, Annapolis, age 74, died September 28, after an illness of several years.

Dr. Albert Clark, Baltimore, age 30, died October 14 from pneumonia.

Dr. L. J. Simonton, Centerville, age 38, died at his home October 10.

Dr. H. Norton Porter, Hagerstown, age 36, died October 4 from pneumonia.

Dr. George W. Grey, Baltimore, died October 14 from influenza pneumonia.

MISSOURI

Navy Unit No. 25, organized in St. Louis by Dr. R. B. H. Gladwell, is ready for service. Dr. Gladwell has been commissioned Lieutenant-Commander.

The annual meeting of the Mississippi Valley Tuberculosis Conference was held in St. Louis at the Planters Hotel October 2-4.

Dr. F. A. Baldwin, St. Louis, has accepted the position of Assistant Professor of Bacteriology and Director of the Public Health Laboratory at Missouri State University. For the past four years he has been City Bacteriologist.

Dr. Charles R. Woodson, St. Joseph, had as his guests recently the Buchanan County Medical Society for their sixth annual dinner, which was held at Woodson Sanatorium.

The new cottage for the treatment of patients with tuberculosis erected by the Health Board of St. Joseph is ready for occupancy.

Dr. William J. Hunt, St. Joseph, has resigned as Physician at Buchanan County for service with the Medical Reserve Corps.

Dr. Ellsworth H. Trowbridge, Kansas City, has been appointed Acting Surgeon, U. S. Public Health Service and assigned to the Kansas City District. He formerly had charge of Medical Inspection of Kansas City schools.

Dr. A. W. McAbee, Columbia, has been appointed a member of the State Board of Health, vice Dr. J. W. Ferguson, resigned to join the Army Medical Corps.

Dr. E. P. North, St. Louis; Dr. T. A. Son, Bonne Terre; and Dr. T. H. Wilcoxen, Bowling Green, whose terms expired July 1, have been reappointed members of the State Board of Health.

Deaths

Dr. Elbert Ellsworth Heaton, Lancaster, age 46, died October 4.

Dr. John E. Alder, Cane Hill, age 75, a Civil War veteran, died suddenly September 26.

Dr. Abraham P. Willard, Kirksville, age 92, a Civil War surgeon, died at his home September 11 from arteriosclerosis.

Dr. G. W. Harmon, Springfield, age 67, died October 15 from heart trouble.

Dr. M. Luther Spriggs, Joplin, age 45, died October 26.

MISSISSIPPI

Dr. A. G. Prince, Greenville, who recently underwent the operation of gastroenterostomy at St. Mary's Hospital, Rochester, Minn., is reported recovering rapidly.

Deaths

Dr. Joseph J. Stevens, Hattiesburg, age 51, died October 15.

Dr. A. L. Gressett, Chumkey, a surgeon in the Confederate Army, died at his home September 21 from senile dementia.

Dr. Joseph Warren Tillson, Cudahy, age 44, died at his home June 10 from heart disease.

Dr. John Farrar Hunter, Jackson, age 58, died at his home October 5 from heart disease.

Dr. John Houston Steen, Vaughan, Lieutenant, Medical Corps, U. S. Army, age 37, is reported to have been killed in action August 11.

Dr. E. W. Menar, Bay St. Louis, age 36, died October 15 from influenza pneumonia.

NORTH CAROLINA

The members of the Craven Medical Society, at a meeting on October 1, decided to increase their fees for professional service. This was made necessary by the increased cost of living.

Dr. S. W. Battle, Asheville, has received an appointment to duty in Washington with the Council on National Defense.

Dr. T. V. Goode, Jr., who has been practicing in Morgantown for several years, will become assistant to Dr. H. F. Long in his hospital work in Statesville.

Dr. Charles O'H. Laughinghouse, Greenville, is to go on overseas duty as Commanding Officer, Base Hospital Unit No. 8. He has been advanced from Major to Lieutenant-Colonel.

Dr. Oliver Linwood Stringfield, Jr., Marshall, Captain, Medical Corps, U. S. Army, was married to Miss Louis Wood, of New Canton, Conn., August 28.

Drs. J. P. Monroe and S. R. Thompson, Charlotte, have plans completed for the erection of a \$12,000 apartment house.

Hugh Clithorne Wolfe, Greensboro, Assistant Surgeon, U. S. Navy Reserve Forces, was married to Miss Anne Elizabeth Bagley, August 19.

Dr. John B. Bullard, Stedman, Lieutenant, Medical Reserve Corps, U. S. Army, was married to Miss Lena Shubrick Cole.

Dr. Joseph L. McCabe, Elizabeth City, Lieutenant, Medical Reserve Corps, U. S. Army, was married to Miss Edmonia Johnston Beattie, of Richmond, September 4.



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(Continued from page 776)

Dr. John A. Williams, Greensboro, was elected President of the Eighth District Medical Society at its recent semi-annual meeting held in North Wilkesboro.

The North Carolina Orthopedic Hospital School, Gastonia, will soon begin the erection of a 50-bed building to cost \$30,000 to \$50,000.

Improvements aggregating \$100,000 are to be made at the Central State Hospital for the Insane, Raleigh. The improvements include new heating and electric plants.

Deaths

Dr. Pressly Robinson Brown, Swepsonville, Lieutenant, Medical Corps, U. S. Army, age 34, is reported to have been killed in action in France in July.

Dr. Ben Wilingham, Wilmington, age 36, died October 6 from an attack of grippe.

Dr. E. W. Jones, Hatteras, died October 2.

Dr. P. K. Brown, Raleigh, is reported to have been killed on the western front in France about July 1.

Dr. L. L. Campbell, York, died October 2.

Dr. Willis Alston, Littleton, age 39, died October 7 from influenza pneumonia.

Dr. John Sidney Harrison, Elm City, aged 41, died in Rocky Mount early in October from pneumonia.

OKLAHOMA

Dr. E. L. Evans, Wilberton, has been appointed Local Board Examiner, vice Dr. J. A. Munn, resigned to enter the Army Service.

Dr. T. B. Hinson, Enid, has been appointed Assistant Surgeon, U. S. Navy, and ordered to Oklahoma City to assume charge of Naval Examination.

A new 35-bed hospital has been opened at Okmulgee. Dr. W. C. Mielmer is President of the Board of Control and Miss Catherine Watts, Superintendent of Nurses.

Dr. W. Eugene Dixon, Oklahoma City, was an invited guest at the annual meeting of the Utah State Medical Association in September. He read a paper in the Eye, Ear, Nose and Throat Section.

The Medical Societies of Pawnee, Oklahoma and Grady counties have passed resolutions disapproving in general any movement of physicians into their counties to take the place of physicians absent in war work.

Dr. C. A. Thompson, Muskogee, has been promoted to Major, Medical Corps, U. S. Army. He has been Medical Aide to the Governor since November and in charge of Medical Advisory Boards and Local Boards as to medical matters.

Dr. L. Haynes Buxton, Oklahoma City, returned early in September from his vacation in Colorado.

Dr. A. H. Herr, Okmulgee, has been named City Physician.

Dr. J. S. Vittum, Muskogee, while on a recent fishing trip suffered a fracture of fibula.

Dr. Leo L. Smith, Sapulpa, Lieutenant Medical Corps, U. S. Army, stationed at Camp Pike, Ark., was married to Miss Mabel E. Robinson August 22.

Dr. E. L. Denison, Garven, was elected President of the State Medical Board at a recent meeting.

Dr. Nelson P. H. White, Clinton, was seriously injured when his automobile was struck by a train at a grade crossing some three miles east of Clinton.

The Oklahoma Association for the Prevention of Tuberculosis and State Public Health Conference held its annual meeting in Oklahoma City September 24, with some two hundred delegates in attendance. It was voted to change the name of the Association to the Oklahoma Tuberculosis Association.

The city of Bartlesville, so it is reported, will soon let contract for the erection of a \$50,000 hospital.

Deaths

Dr. J. M. Coon, McLain, aged 63, died September 27.

Dr. John Richard Dale, Hobart, aged 48, died September 28.

SOUTH CAROLINA

The Medical College of the State of South Carolina, Charleston, opened its ninetieth session September 27. Dr. Robert Wilson, Jr., Dean, made the opening address and explained the Student Army Training Corps, a unit of which has been established at the college.

(Continued on page 30)

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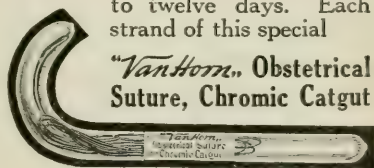
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(Continued from page 28)

Dr. F. L. Ravenel, Florence, was married to Miss Alice E. La Bruce at Georgetown, October 10.

At a recent meeting of the Marlborough Medical Society every doctor present volunteered for service in the Army.

Dr. S. W. Pryor, Chester, is to build a nurses' home in connection with his hospital.

Work will soon start on the new \$130,000 annex to the Greenville City Hospital, Greenville.

Deaths

Dr. Harry E. McConnell, Chester, aged 52, died at Johns Hopkins Hospital August 18.

Dr. Edwin F. Crangston, Florence, aged 57, died October 5 from heart failure.

Dr. John W. Colson, Varnville, aged 57, died September 25.

Dr. J. C. Moore, Marion, aged 45, died October 10 from influenza.

Dr. William Ellerbe Pelham, Newberry, aged 39, died recently from influenza.

Dr. W. G. White, York, died October 12 from an attack of grippe.

Dr. L. L. Campbell, York, died October 2.

TENNESSEE

College of Medicine, University of Tennessee, Memphis, opened September 25. The college has a unit of the Student Army Training Corps.

The twenty-sixth annual meeting of the Association of Military Surgeons was held at Camp Greendale, Chattanooga, the middle of October.

Meharry Medical College, Nashville, opened early in October. Dr. G. W. Hubbard, Dean, addressed the students along patriotic lines.

The Baptist Memorial Hospital, Memphis, is to have an addition, eight stories, brick, terra cotta and concrete, also will erect another story to the present seven-story building, the cost to be \$175,000.

(Continued on page 32)

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(Continued from page 30)

The Crittenton League of Mercy is building a small hospital at St. Elmo.

The Dyersburg General Hospital, Dyersburg, was recently opened.

The War Department has prepared plans for remodeling the Lotus Building, Memphis, for a rehabilitation hospital.

Dr. G. F. Hicks has moved from Camden to Paris.

Dr. O. K. Warmack is the new physician for the L. & N. R. R. at Paris.

Deaths

Dr. N. A. McCoy, Jackson, aged 86, died at his home September 9.

Dr. Francis A. Woodward, Springfield, aged 60, died at his home September 18.

Dr. Nathaniel Gooch, Nashville, aged 78, died at his home September 9.

Thomas Weaver, Nashville, aged 45, died at St. Thomas' Hospital from pneumonia on October 6.

Dr. George G. Benson, Nashville, aged 74, died September 26.

Dr. William Kabler, Bristol, aged 39, died October 11 from influenza pneumonia.

Dr. E. B. Hunter, Johnson City, aged 73, was killed October 10 by a freight train locomotive.

Dr. Charles H. Wibur, Nashville, aged 35, died at Camp Zachary Taylor, Louisville, Ky., from influenza pneumonia.

Dr. A. S. N. Dobson, Limestone, aged 80, died September 27.

TEXAS

The Commissioners of Angelina County opened bids in August for a hospital at Lufkin.

It is reported that the War Department will spend \$255,000 to increase the facilities at the base hospital at Fort Sam Houston.

Construction work will start at an early date on the new State Hospital for the Insane at Wichita Falls. The Board of Control having selected the exact location for the buildings.

Baylor Medical College, Dallas, opened for its eighteenth annual session September 30. The school has a unit of the Student Army Training Corps. Dr. Edward H. Cary, Dean, made the opening address.

Medical School, University of Texas, Galveston, opened September 29. It has a unit of the Student Army Training Corps.

Dr. J. L. Womack, Edna, has been appointed Health Officer of Jackson County.

The Northwest Texas Medical Association met at Fort Worth October 10-11.

The South Texas Medical Association, which was to have held its semi-annual meeting in Galveston, October 11-12, was postponed until a later date because of the influenza epidemic.

Dr. Oscar Davis, Navasota, was recently appointed Assistant State Health Officer. He fills the vacancy caused by the resignation some weeks ago of Dr. A. L. Lindeum.

Dr. W. W. Greer, Cameron, has been appointed Assistant Physician at the State Insane Asylum, Austin.

Dr. E. H. Cary, Dean Baylor Medical College, announces a Pasteur Institute in connection with the College and the Texas Baptist Memorial Sanitarium.

Dr. T. P. Goodman has been added to the faculty of the College and will have charge of the new department.

Deaths

Dr. Charles B. Gruver, Waco, aged 40, Acting Assistant Surgeon, U. S. Public Health Service, died October 7 from pneumonia.

Dr. Joseph Girard, San Antonio, Colonel, Medical Corps, U. S. Army, retired, aged 71, died at his home August 25.

Dr. Joseph David Cohn, Corpus Christi, aged 30, died at his home September 30 from pneumonia.

Dr. Jacob Samuel Price, Beaumont, aged 53, died September 12 from heart disease.

Dr. John Riley Lewis, Gainesville, aged 31, Lieutenant, Medical Corps, U. S. Army, died at a training camp on Long Island, New York, September 25, where he was on duty.

(Continued on page 31)

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(Continued from page 32)

Dr. Work A. Streeter, Waco, aged 28, died October 14 of pneumonia at Harrisburg, Penn.

Dr. G. P. Reeves, Marlin, aged 33, died October 13 from concussion of the brain sustained when he fell out of his buggy.

Dr. J. E. Sneed, Teague, aged 37, died the middle of October from influenza.

Dr. J. A. Moore, Temple, aged 42, Lieutenant, U. S. Army Medical Corps, died October 16 at Jourdanton, Texas, from heart disease.

VIRGINIA

A receiving hospital to cost \$300,000 will be added to the plant of the Catawba Sanatorium, Catawba. The contract has been awarded.

The sixty-second quarterly meeting of the Southside Virginia Medical Association was held at Emporia September 10. Dr. Joel Crawford, President pro tem, presiding. The next meeting will be held in Hopewell the second Tuesday in December.

Approximately \$500,000 is reported to be spent in enlarging the base hospital at Camp Lee. The buildings will add accommodations for some 300 extra beds.

Dr. Stuart McGuire, Richmond, Major, Medical Reserve Corps, U. S. Army, at the head of Base Hospital No. 45, France, has recently been promoted to Lieutenant-Colonel.

Dr. Francis G. Anderson has joined the staff of the Catawba Sanatorium.

Dr. W. H. Willingford will soon open a small hospital at Mullins.

Dr. P. A. Irving, Farmville, has been designated surgeon for the Student Army Training Corps at Hampden-Sidney College, to examine applicants for that unit.

It is reported that the U. S. Army hospital at Westhampton, just outside the city of Richmond, will probably be doubled. Its present capacity is 1,000 beds.

Dr. J. L. Alexander, Staunton, will act as regular physician at the Staunton Military Academy during the present session.

(Continued on page 36)

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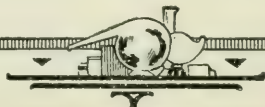
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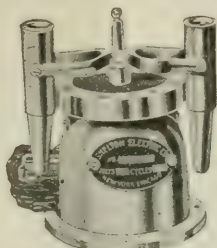
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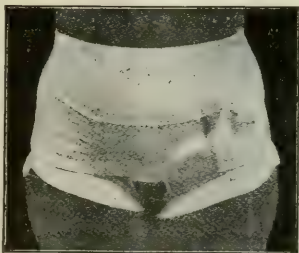
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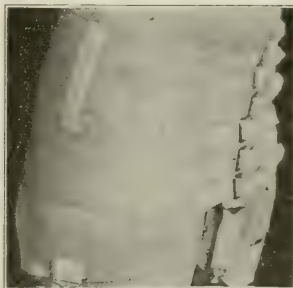
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(Continued from page 34)

The State Executive Committee of the Volunteer Medical Corps is composed of Dr. J. A. White, Richmond, Chairman; Dr. M. O. Burke, Richmond, Secretary; Dr. J. N. Upshur, Richmond; Dr. J. W. Preston, Roanoke; Dr. P. A. Irving, Farmville; Dr. Southgate Leigh, Norfolk, and Dr. Hunter McGuire, Winchester.

Dr. E. C. Stuart, Winchester, has been appointed a member of the Local Exemption Board of Winchester and Frederick County, vice Dr. E. W. Boyd, resigned to enter Medical Reserve Corps, U. S. Army.

Owing to the influenza epidemic the forty-ninth annual session of the State Medical Society, which was to have been held in Richmond October 22-25, was postponed.

Dr. Herman Welland, Middlebrook, was married to Miss May Lucas, Raphine, on August 15.

Dr. John P. Clark has been appointed Medical Inspector of the Lynchburg public schools, vice Dr. W. Clyde Adkerson, resigned to enter Army Medical Service.

Dr. Rudolph Tensler, formerly of Richmond, but for some time in charge of St. Luke's Hospital at Tokyo, Japan, heads the Red Cross unit with the American troops on the Siberian expedition.

Dr. George E. Wiley was elected City Physician of Bristol recently.

The Medical College of Virginia has a unit of the Student Army Training Corps.

Deaths

Dr. Bronson Ewing Summers, Richmond, aged 28, Lieutenant (Junior Grade) U. S. Navy, died October 12 from influenza pneumonia at the hospital of the U. S. Marine Corps at Quantico, Va., where he was stationed.

Dr. William Dandridge Turner, Shoalbay, aged 60, died at the home of his son October 12.

Dr. Thomas Nash Broadus, Richmond, aged 32, died October 5 from influenza pneumonia.

Dr. Reuben Frank Davis, Lexington, aged 33, died October 5 from influenza pneumonia.

Dr. Edwin LeBaron Goodwin, Ashland, aged 32, died at Fort Niagara, N. Y., from influenza pneumonia. He was a Lieutenant in the Medical Reserve Corps.

Dr. Vivian Slaughter, Orange, is reported killed early in October in France. He joined the medical corps of the British Army in 1914 soon after the war broke out.

Dr. William Karp, Portsmouth, aged 30, died at Camp Meade, Maryland, October 2 from influenza. He was in the Government service and stationed at Camp Meade.

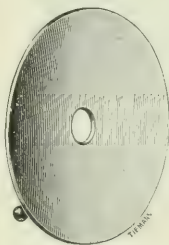
Dr. W. F. Kobler, Bristol, aged 35, died October 11 from influenza pneumonia.

Dr. F. Sherman Echols, Newport News, aged 32, Acting Assistant Surgeon U. S. Public Health Service, died October 15 at the Walter Reed Emergency Hospital from influenza pneumonia.

Dr. G. Clyde Shuler, Winchester, aged 25, died October 5 at Great Cacapon, W. Va., from influenza pneumonia.

Dr. H. M. Duncan, Middleton, aged 55, died October 11 from pneumonia.

(Continued on page 38)



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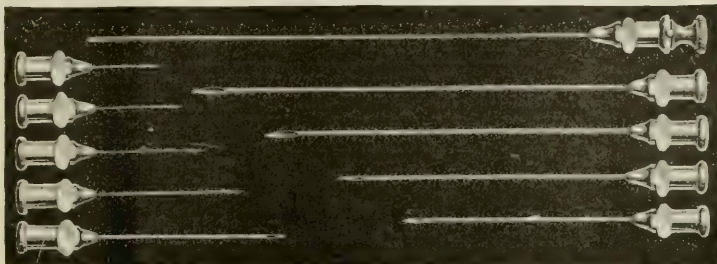
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(Continued from page 36)

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WEST VIRGINIA

The West Virginia State Medical Society held its fifty-first annual meeting in Martinsburg October 1-2. Officers elected for next year: President, Dr. Robert F. Reed, Wheeling; First Vice-President, Dr. J. F. Fox, Bluefield; Second Vice-President, Dr. S. M. Mason, Charleston; Third Vice-President, Dr. C. M. Haves, Huntington; Secretary, Dr. J. Howard Anderson, Marytown; and Treasurer, Dr. H. G. Nicholson, Charleston. Charleston was chosen as the next meeting place.

Dr. S. L. Jepson, State Health Commissioner, Charleston, in September took his first vacation in two years.

Drs. C. C. Peters and G. L. Todd, Princeton, have purchased the Hotel Francis and will convert it into a hospital.

Dr. H. E. Sheen, Charleston, has been appointed a member of the West Virginia State Public Health Council, succeeding Dr. F. E. Earnsworth, Wheeling, who resigned to accept the position of Director of the Division of Venereal Diseases in the State Health Department.

The Ohio Valley Medical Society met at Wheeling October 17 in celebration of the fiftieth anniversary of the organization.

Dr. Vincent T. Churman, Charleston, has been elected President of the State Public Health Council.

Deaths

Dr. William Pickard Mcgrail, Wheeling, aged 59, died at his home September 30 from cerebral hemorrhage.

Dr. Allen Schley Reynolds, Hancock, aged 6, died at his home September 3 from acute gastritis.

Dr. B. F. Knight, Spring Creek, was killed at Nitro the last of September when a train backed into an ambulance in his charge.

Dr. Hugh M. Neel, Cass, died October 6 at Stanton from paralysis.

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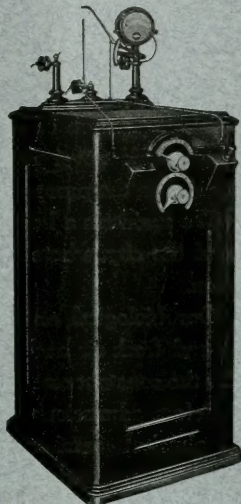
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